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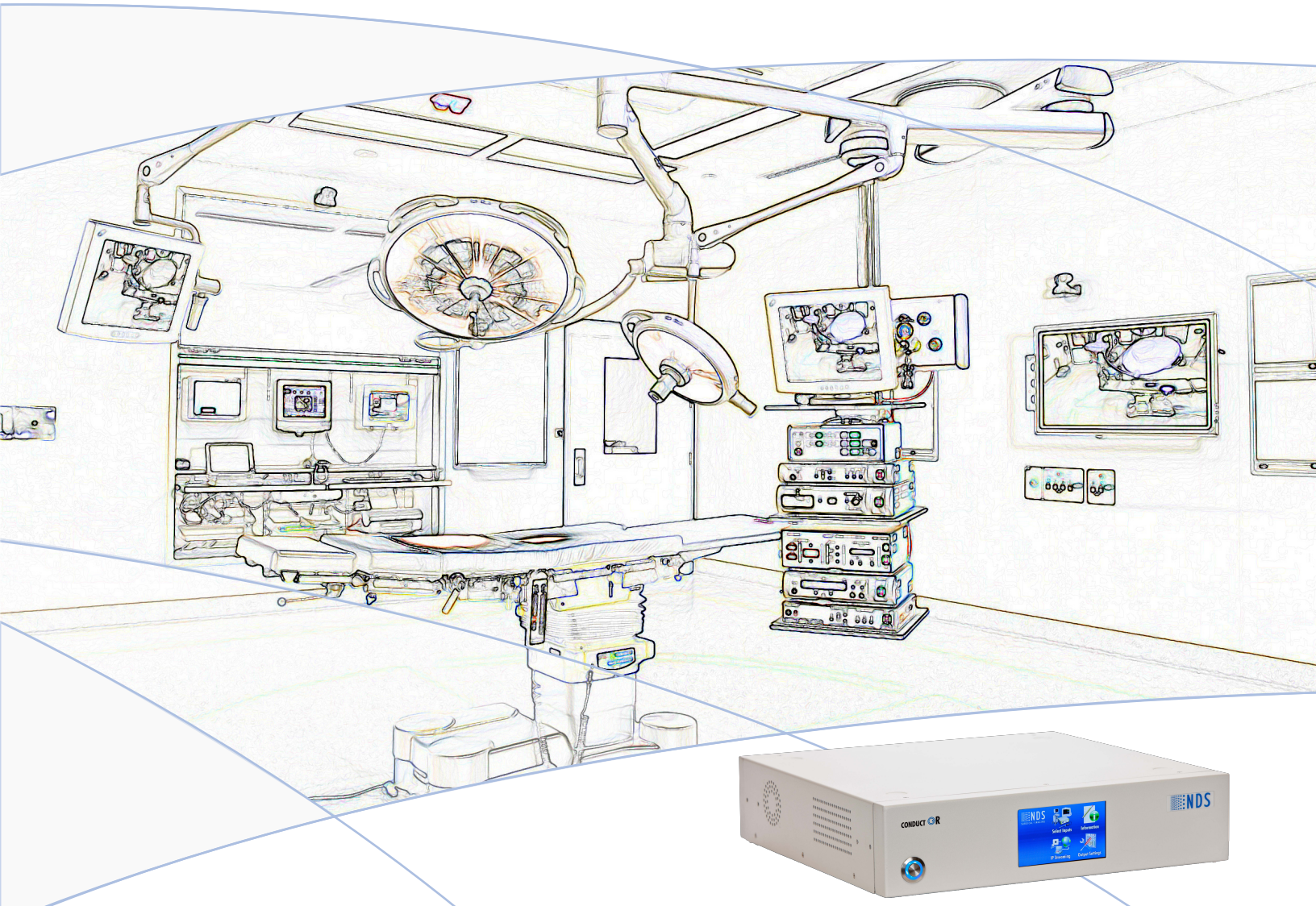

CONDUCT OR™
OR Informatics System

USER MANUAL

[ENGLISH]

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Table of Contents

Tab 1
- Safety Considerations ---- ii
- Recycling ---- ii
- Declaration of Conformity ---- iii
- Legal Statement ---- iii

Tab 2
- About This Manual ---- 1
- Intended Use and Contraindications ---- 1
- ConductOR Overview ---- 2
- General Information ---- 2

Tab 3
- Connector Panel ---- 3
- Fixed Inputs table ---- 3
- Electrical Symbols ---- 4
- Input and Output Modules ---- 5
- Module Removal and Installation ---- 6

Tab 4
- Typical System Configuration ---- 7

Tab 5
- Startup Screen ---- 8
- Front Panel Operation ---- 9
  - Home Screen ---- 9
  - Select Inputs Screen ---- 10
  - Primary and Secondary Input Screens ---- 11
  - PIP, Swap and Disable PIP Buttons ---- 12
  - Keypad Screen ---- 13
  - Output Settings Screen ---- 14
  - Information Screen ---- 14
  - IP Streaming ---- 15

Tab 6
- Basic Operation ---- 16
  - Input Selection ---- 16
  - PIP and Swap ---- 17
  - Image Adjustments ---- 18

Tab 7
- On Screen Display Overview ---- 19
- Display Setup ---- 20
  - SDI Picture Menu ---- 20
  - S-Video Picture Menu ---- 20
  - Composite Picture Menu ---- 20
  - VGA / SOG Picture Menu ---- 21
  - RGBS / YPbPr Picture Menu ---- 21
  - DVI Picture Menu ---- 22
  - Color Menu ---- 23
  - Setup Menu ---- 24
  - Defaults Menu ---- 24

Tab 8
- Utilities ---- 25

Tab 9
- Streaming Video & Audio ---- 26
  - Location to Location Network Connections ---- 26
  - Software Setup ---- 27
  - Location to Location Transmit Setup ---- 28
  - Location to Location Receive Setup ---- 29
  - Location to Location Streaming ---- 32
- Streaming Video ---- 35
- Streaming Audio ---- 36
- Streaming from ConductOR to a PC ---- 37
  - ViewOR G2 Setup and Usage ---- 38
  - ConfigOR Setup ---- 40
  - Using the ViewOR G2 Program ---- 41
- User Configuration ---- 44
- Demonstration Program ---- 45

Tab 10
- Troubleshooting and Test Section ---- 48
- Serial Port Setup ---- 50

Tab 11
- Drawing and Dimensions ---- 51

Tab 12
- Video Connectors and Pin Outs ---- 52
- Data Connectors and Pin Outs ---- 53
- ConductOR Display Control Cable ---- 53
- DC Power connectors and Pinouts ---- 54
- 24 Volt Extension Cable ---- 54
- 24 Volt Extension Cable Schematic ---- 54
- 3.5mm Audio Plug and Pin Out ---- 55
- Fuse Replacement ---- 55

Tab 13
- Specifications ---- 56
- Video Inputs ---- 57
- Video Formats ---- 57
- Cleaning Instructions ---- 57
- Contact ---- Back

1 CAUTION

This symbol alerts the user that important literature concerning the operation of this unit has been included. Therefore, it should be read carefully in order to avoid potential problems.

This symbol warns user that un-insulated voltage within the unit may have sufficient magnitude to cause electrical shock. Therefore, it is dangerous to make contact with any part inside the unit. To reduce the risk of electric shock, **DO NOT** remove cover (or back). ***There are no user serviceable parts inside.*** Refer servicing to qualified service personnel.

To prevent fire or shock hazards, do not expose this unit to rain or moisture. Also, do not use this unit's polarized plug with an extension cord receptacle or other outlets unless the prongs can be fully inserted. The display is designed to meet the medical safety requirements for a patient vicinity device. This device **may not** be used in connection with life support equipment.

Product Safety:
This product meets the medical safety requirements UL 60601-1 for U.S. National requirements, IEC-60601-1 International Requirement and CAN/CSA C22.2 No. 601.1 for Canadian National requirements.

North American Safety Compliance:
WITH RESPECT TO ELECTRIC SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH UL 60601-1/CAN/CSA C22.2 NO. 601.1.

EEC Safety Compliance:
These products meet the requirements of EN 60601-1 so as to conform to the Medical Device Directive 93/42/EEC (general safety information) as amended by 2007/47/EC.

This equipment is energized from 100-240 VAC 50 / 60 Hz power source. It is the responsibility of the installer to ensure that the equipment is installed in accordance with applicable hospital, local and national electrical codes.

An equipotentiality post, located on the back of the equipment, may be used for the purpose of bonding the ConductOR's chassis to other equipment to ensure that all devices are at the same potential. Any such bond must be installed in accordance with applicable electrical codes. The equipotentiality post is shown on the mechanical drawing found on page 3.

Recycling:

Follow local governing ordinances and recycling plans regarding the recycling or disposal of this equipment , or contact the Electronic Industries Alliance (www.eiae.org)

Declarations of Conformity

FCC and Council Directives of European Standards:
This device complies with Part 15 of FCC rules and 93/42/EEC of the Council Directives of European Standards Directive as amended by 2007/47/EC. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable results.

1. Use the specified cables with this device so as not to interfere with radio and television reception. Use of other cables and / or adapters may cause interference with other electronic equipment.
2. This equipment has been tested and found to comply with the limits pursuant to FCC part 15 and CISPR 11. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

IEC:
This equipment has been tested and found to comply with the limits for medical devices to the IEC 60601-1-2. These limits are designed to provide reasonable protection against harmful interference in a typical medical installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity.

FCC, Council Directives of European Standards and IEC:
There is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult your dealer or an experienced radio/TV technician for help.

Accessory equipment connected to this monitor must be certified according to the respective IEC Standards (i.e., IEC 60950-1) for data processing equipment and IEC 60601-1 for medical equipment). Furthermore, all configurations shall comply with the system standard, IEC 60601-1-1. Anyone who connects additional equipment to the signal input part or signal output part configures a medical system, and is therefore responsible that the system complies with the requirements of system standard IEC 60601-1-1. Whoever is responsible for securing the monitor to a system needs to insure that the mounting equipment used with this display complies to IEC standard 60601-1. If in doubt, consult the technical services department or your local representative.

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Customers are cautioned that system configuration, software, the application, customer data and operator control of the system, among other factors, affect the product's performance. While NDS products are considered to be compatible with many systems, specific functional implementation by customers may vary. Therefore, suitability of a product for a specific purpose or application must be determined by the consumer and is not warranted by NDS.

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About This Manual

2

This manual is designed to assist the user with installation, setup and operation of the **ConductOR** and its associated displays. A list of displays that may be used with the **ConductOR** is in the Compatible Displays section on the following page.

A blue numbered tab on the side of the page denotes the beginning of a section.

The functional descriptions in this manual are representative of:
ConductOR:
Part Number: 90T0007

Firmware:
Scalar: 58J0039 Version A and later.
Controller: 58C0101 Version A and later.

Manual Part Number 60G0368 Rev C

Intended Use and Contraindications

Intended Use:
This device is intended for use in a medical environment to route high quality video and graphic images .

Contraindications:
This device may not be used in the presence of flammable anesthetics mixture with air, oxygen or nitrous oxide. Also, it is not intended for life support applications.

Condition	Possible Cause	Mitigation
End user cannot view the video data from a connected video source	Incompatibility with video source equipment.	When video source equipment is connected to the ConductOR, the end user must verify that video is passed from the video source through the ConductOR and is displayed correctly on the connected monitors .
External control failure	RS-232 communication failure.	Control unit from front panel touch screen.
ConductOR cannot be powered on.	Defective internal power supply	Bypass the ConductOR by connecting the output of the video source directly to a monitor.

For mission critical applications, we strongly recommend that a replacement unit be immediately available.

ConductOR Overview

The ConductOR has 4 fixed inputs as shown in Fixed Inputs table below. Up to 4 input modules and up to 4 output modules may be added. The drawing on page 3 shows location of the fixed input connectors and the input and output modules. The 24 VDC power out connector provides power, 120 watts maximum, to an external device. The input and out modules are described on page 5.

Fixed Inputs	Input Signal	Notes
S-VIDEO IN A / COMP IN A	NTSC or PAL	Only one may be selected at a time.
S-VIDEO IN B / COMP IN B	NTSC or PAL	Only one may be selected at a time.
VGA / SOG	VGA or SOG	Only one of these signals may be applied.
DVI / RGBS / YPbPr	DVI or RGBS or YPbPr	Only one of the signals may be applied. Maximum resolution is: 1920 x 1080 progressive.

General Information

Installation:

ConductOR units may be stacked on a equipment carrier, a surgical cart or mounted in a standard 19" rack. Do not block the air vents.

Compatible Displays:

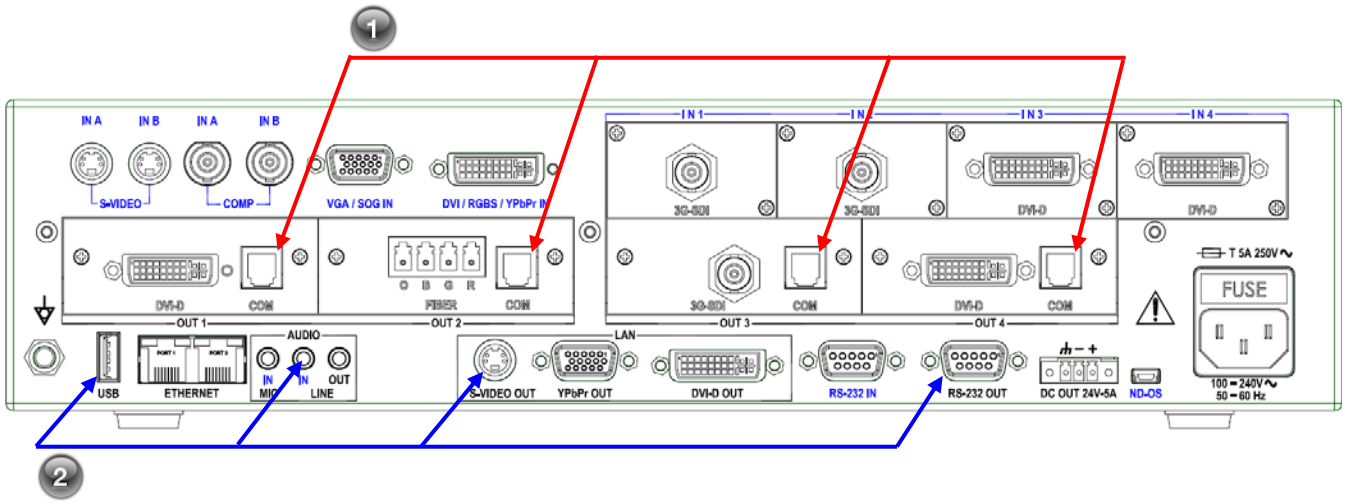
1. HD displays with Fiber Optic input.
2. HD displays with a DVI input that accepts signals with 720p or greater resolution.
3. HD displays with HD-SDI or 3G-SDI input.

Control Options:

The ConductOR may be controlled from:

1. Its front LCD touch panel.
2. A PC via the RS-232 port. See page 50 for serial port setup and test details. The NDS Unified Serial Commands (P/N 60A0156) document contains a complete set of serial commands for the **ConductOR**. Please contact your NDS sales representative for details.

Connector Panel



Notes:

1. There are 8 video inputs, 4 are fixed and 4 removable. Two S-VIDEO, two COMP, VGA/SOG IN and a DVI/RGBS/YPbPr comprise the fixed inputs. The Fixed Inputs table, on the previous page, describes the capabilities and limitations of the fixed inputs.
2. Currently 2 types of input modules are available: 3G-SDI and DVI-D. A maximum of 4 input modules may be installed in any combination.
3. Currently 3 types of output modules are available: FIBER, DVI-D and 3G-SDI. A maximum of 4 output modules may be installed in any combination.
4. AUDIO accepts an analog input from a microphone (MIC). The audio output (OUT) is a line level analog output. The signal presented to the OUT connector is intended for use with headphones. If a speaker is required this output may be connected to an amplifier or amplified speaker.
5. When the unit is in receive mode, YPbPr OUT outputs the video data that is inbound to the streamer. This data may viewed by selecting LAN as the input for the active display. See Select Input Screen on page 10 and Primary and Secondary Input Screens on page 11. The DVI-D OUT outputs video data from the selected **Stream Source**. See **IP Streaming** on page 15.
6. Audio data is retrieved from the ETHERNET connection, converted to analog and presented to the OUT connector.
7. The ETHERNET port has two connectors, allowing multiple **ConductORs** to be connected together and then be connected to a PC or network via a single cable.

COM Connector

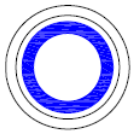
1 Each output module has an RJ-22 COM connector which allows the **ConductOR** to control a Radiance or EndoVue display via its RS-232 port. The RJ-22's pin out and a **ConductOR** to Radiance or EndoVue cable wiring diagram are on page 53. The required serial commands document is described in the General Information section on the previous page.

Unused Connectors

2 These connectors are not used: USB, S-VIDEO OUT, RS-232 OUT and LINE IN.

Electrical Symbols

Equipotentiality:
This symbol appears next to the ConductOR's Potential Equalization Conductor .

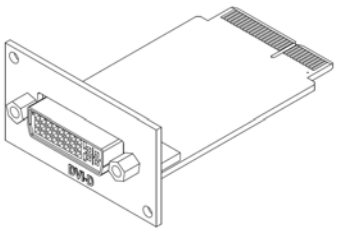


Power Switch:
The power switch is push on / push off. When the switch is off the ring around the center portion is white. When the switch is on, the center portion is depressed and the ring is illuminated blue. The illustration shows the switch in its **ON** state.

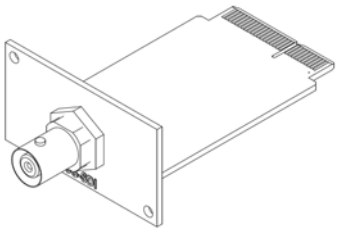
Removable Input and Output Modules

Input Modules:
Two types of input modules are available: DVI-D and 3G-SDI.

Notes:
1. The input modules, shown below, may be installed in any of the **IN** (see page 3) card slots in any combination and in any order. Up to four input modules may be installed.
2. The 3G-SDI input module accepts SDI signals up to 1920 x 1080 progressive at 60Hz.
3. The DVI-D input modules accepts DVI signals up to 1920 x 1200 progressive at 60Hz.



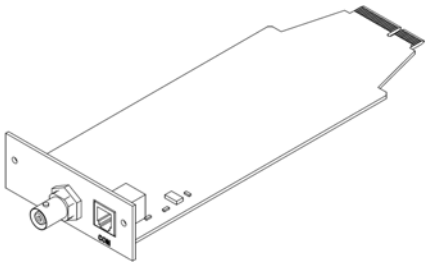
DVI-D



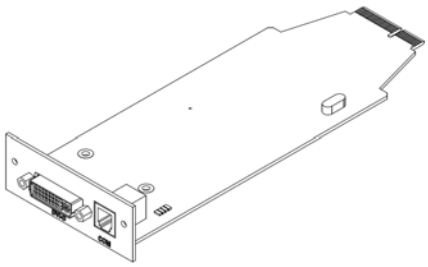
3G-SDI

Output Modules:
Three types of output modules are available: 3G-SDI, DVI-D and Fiber Optic.

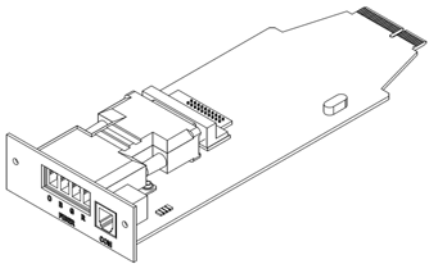
Notes:
1. The output modules, shown below, may be installed in any of the **OUT** (see page 3) card slots in any combination and in any order. Up to four output modules may be installed.
2. The DVI-D and Fiber Optic output modules output signals of: 1280 x 720 progressive, 1920 x 1080 progressive or 1920 x 1200 progressive at 60Hz. **Note:** When a DVI or Fiber Optic output module is selected as the streaming source its output is limited to 1920 x 1080p.
3. The 3G-SDI output module outputs signals of: 1280 x 720 progressive, 1920 x 1080 Interlaced or 1920 x 1080 progressive at 60Hz.
4. **OUT 4** is slaved to **OUT 3**. Therefore, installing a DVI-D or Fiber Optic module in one of them and a 3G-SDI module in the other limits the output of the DVI-D or Fiber Optic module to720p or 1080P. the 3G-SDI module may be set to720p, 1080i or 1080p. Setting the output resolution is described on page 14.



3G-SDI



DVI-D



Fiber Optic

Module Removal and Installation

The ConductOR must be turned off prior to installing or replacing input or output modules.

Input Module Removal:

Use a number 1 Phillips screwdriver to loosen, but not remove, the screws located on the upper left and lower right corners of the module's mounting plate. When the screws are clear of the chassis, remove the blank plate or module by gripping the screws and pulling the plate or module out.

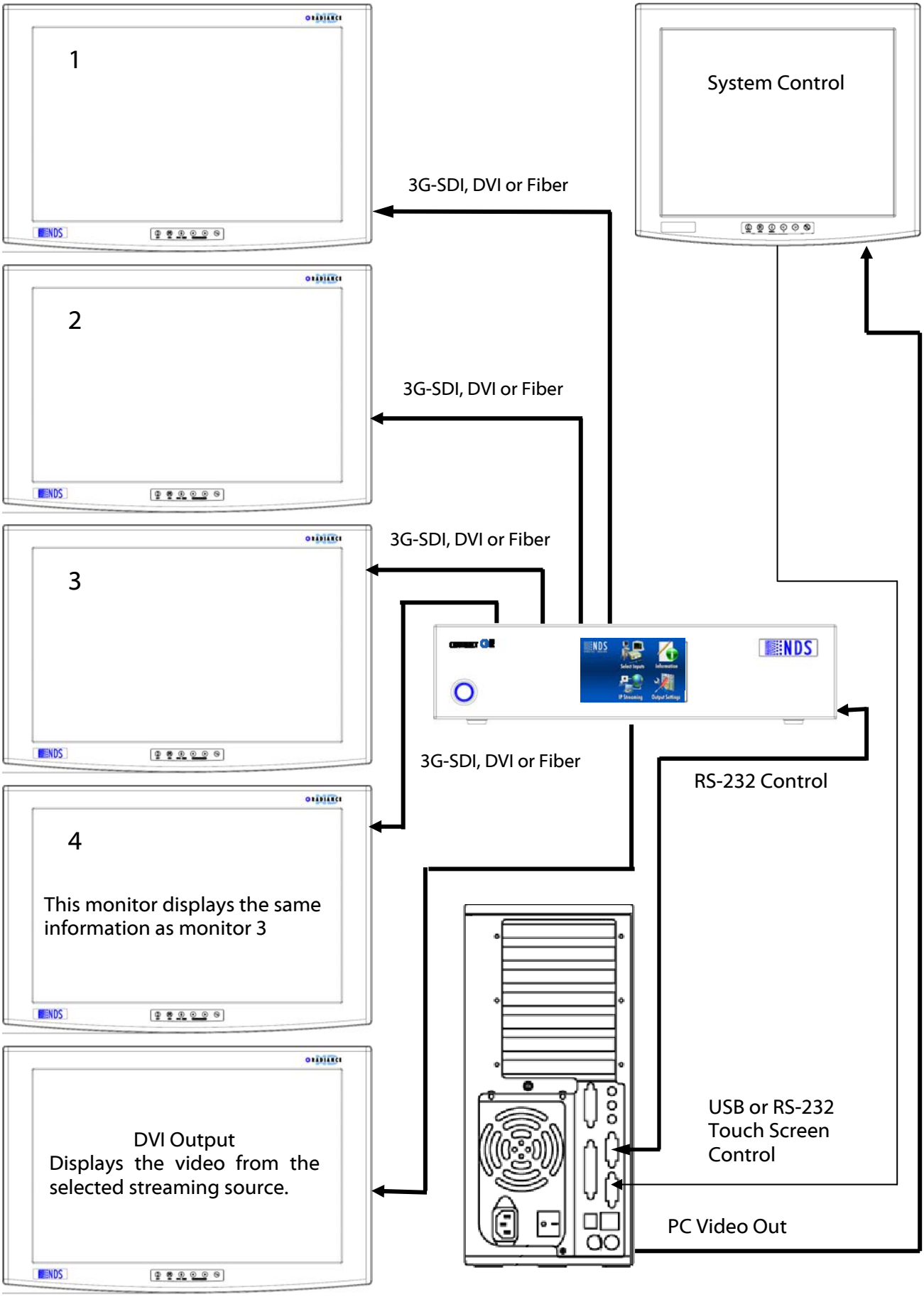
Output Module Removal:

Use a number 1 Phillips screwdriver to loosen, but not remove, the screws located on the left and right sides of the module's mounting plate. When the screws are clear of the chassis, remove the blank plate or module by gripping the screws and pulling the plate or module out.

Installation:

Slide the new module into the chassis until it contacts the connector, then push gently until the module seats. The module is correctly seated when its mounting plate is flush with the chassis's back panel. Thread the module's screws into the chassis until they touch the mounting plate, then tighten each screw by turning it another quarter turn.

Typical System Configuration



Startup Screen

The **Startup** screen, shown below, appears as soon as power is applied to the ConductOR and is displayed until the ConductOR's Power On Self Test (POST) finishes. The POST takes approximately 20 seconds to complete. After the POST finishes, the home screen is displayed. **Home** screen is shown on page 9.

Front Panel Operation

Home Screen

The **Home** screen, shown below, is the starting point for all front panel operations. The icons on the home screen and their functions are briefly described below and described in greater detail on the following pages.

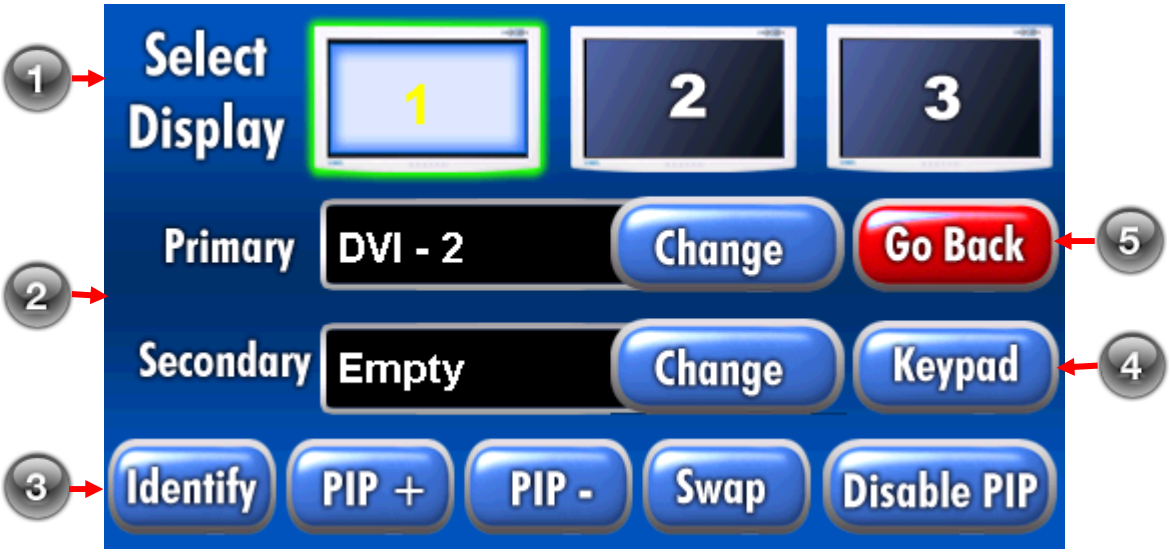
Select Inputs Allows the user to select an output and its primary and / or secondary input. Touch this icon to open the Select Inputs screen shown on the following page.

Information Provides information about the ConductOR. The user may restore the ConductOR's factory defaults or update the scalar firmware. Touch this icon to open the Information screen shown on page 14.

IP Streaming This screen is associated with network operations and requires a network connection to be effective. Touch this icon to open the IP Streaming screen shown on page 15.

Output Settings Provides a means to set the output resolution of each module. **Note:** If output modules 3 and 4 are DVI or Fiber and SDI then the output resolution is limited to 720p or 1080p for the DVI or Fiber output. The SDI output may be set to 720p, 1080p or 1080i. Touch this icon to open the Output Settings screen shown on page 14.

Select Inputs Screen



1. The active output is the highlighted display icon on the **Select Display** row. To select a different output touch its display icon.

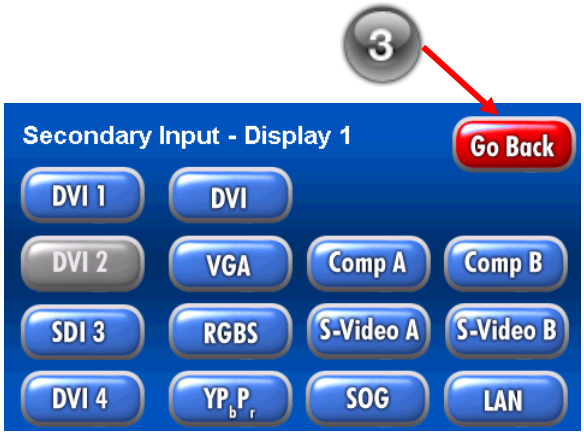
2. The selected output's current input sources are shown in the **Primary** and **Secondary** windows. The **Primary Input** and **Secondary Input** screens are shown on the following page. Touch the **Go Back** button to return to the home screen.

3. Touching the **Identify** button displays a 1, 2 or 3 on the monitor connected to the corresponding output. **Note:** As output 4 is slaved to output 3, a 3 will be shown on monitors 3 and 4. The **PIP +**, **PIP -** **Swap** and **Disable PIP** buttons are described on page 12.

4. Touching the **Keypad** button opens the Keypad screen and allows access to the ConductOR features that are not frequently used. The **Keypad** buttons are described on page 13.

5. Touch the **Go Back** button to return to the **Home** screen.

Primary and Secondary Input Screens

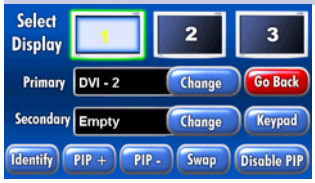


1. To select a primary input, touch the **Change** button on the **Primary** row. The illuminated button on the **Primary Input** screen is the current input. Select a **Primary** input by touching the button associated with that input.

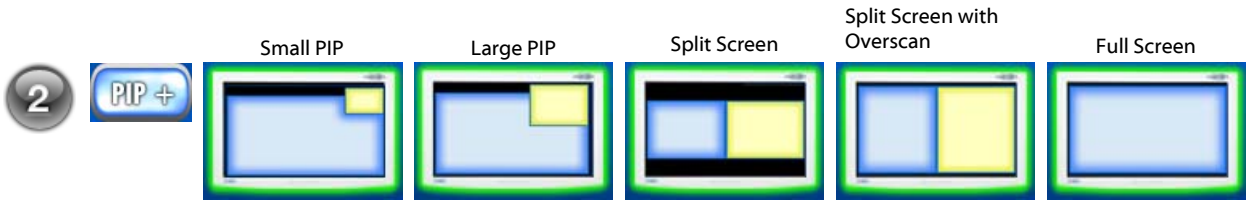
2. To select a secondary input, touch the **Change** button on the **Secondary** row. A grayed out button on the **Secondary Input** screen may not be selected as a secondary input.

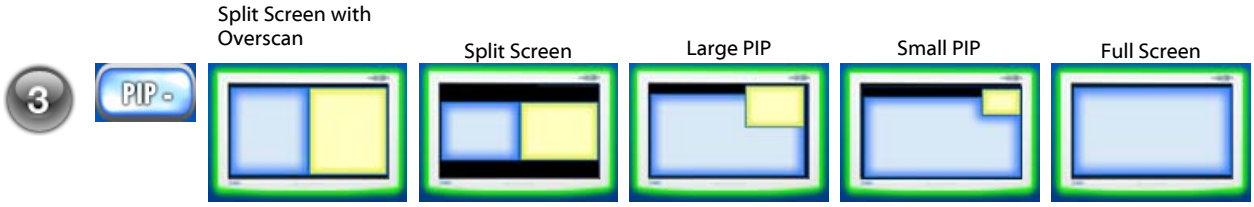
3. Touch the **Go Back** button to return to the **Select Inputs** screen.

PIP, Swap and Disable PIP Buttons



The **PIP +**, **PIP -**, **Swap** and **Disable PIP** buttons are located on the bottom row of the **Select Inputs** screen (page 10) and are effective only when a secondary input has been selected. Select a secondary input as described on the previous page.





1. A source should be displayed in the **Primary** and **Secondary** windows and a small PIP rectangle appears in the upper right corner of the selected display icon. An example is shown above.

2. Touching the **PIP +** button causes the button to illuminate momentarily and the PIP size in the icon changes. Each time the **PIP +** button is touched the PIP icon changes as you cycle through the PIP sizes.

3. Touching the **PIP -** button causes the button to illuminate momentarily and the PIP size in the icon changes. Each time the **PIP -** button is touched the PIP icon changes as you cycle through the PIP sizes.

4. Touch the **Swap** button to exchange the text in the **Primary** and **Secondary** rows. The primary and secondary images displayed on the attached monitor are swapped.

5. The secondary input may be cleared by touching the **Disable PIP** button.

Keypad Screen

On the **Select Inputs** screen (page 10), touch the **Keypad** button to display the **Keypad** screen. To observe the effect of changing an output's parameters, a monitor must be connected to the output whose parameters are being changed. Changing the **ConductOR**'s parameters does not change the connected monitor's parameters. **Note:** We recommend that the connected monitor's parameters not be changed as this may degrade the displayed image.

Touch the **Identify** button to identify the output whose parameters are to be adjusted, then touch the corresponding display icon to select that output.

When you touch any of the keypad buttons, the button and the LED above it turn green until you release the button.

Touch the **MENU** button to open the OSD. The **SCROLL** and ◄ or ► button usage is detailed starting on page 20.

Touch the **SCROLL** button to select the parameter you want to change.

Touch ◄ or ► to select the menu or parameter you want work with.

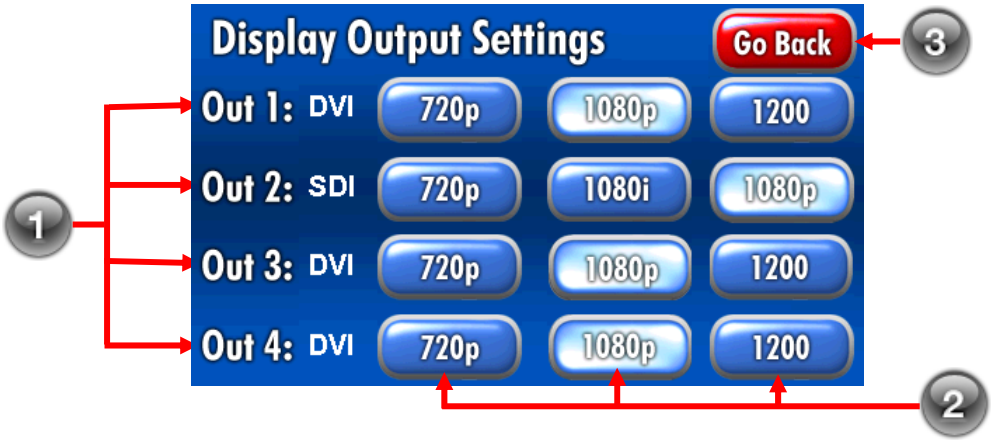
The **Brightness / Contrast** button usage is detailed on page 18.

Touch the **Go Back** button to return to the **Select Inputs** screen.

Changes made via the keypad are retained when the **ConductOR**'s power is cycled.

Output Settings Screen

Touch the **Output Settings** icon on the home screen (page 9) to display the **Display Output Settings** screen.



1. Choose **OUT 1**, **OUT 2**, **OUT 3** or **OUT 4**.

2. Select the desired output setting by touching the **720p**, **1080i**, **1080p** or **1200** button. The **1080i** option is available for SDI output modules only and the **1200** option is only available for DVI and Fiber Optic output modules. **Note:** If outputs 3 and 4 are DVI or Fiber and SDI, then the DVI or Fiber output resolution cannot be set to **1200**.

3. Touch the **Go Back** button to return to the **Home** screen.

Information Screen

Touch the **Information** icon on the **Home** screen (page 9) to display the **Information** screen. This screen displays general information about your ConductOR. See the screen shot below.

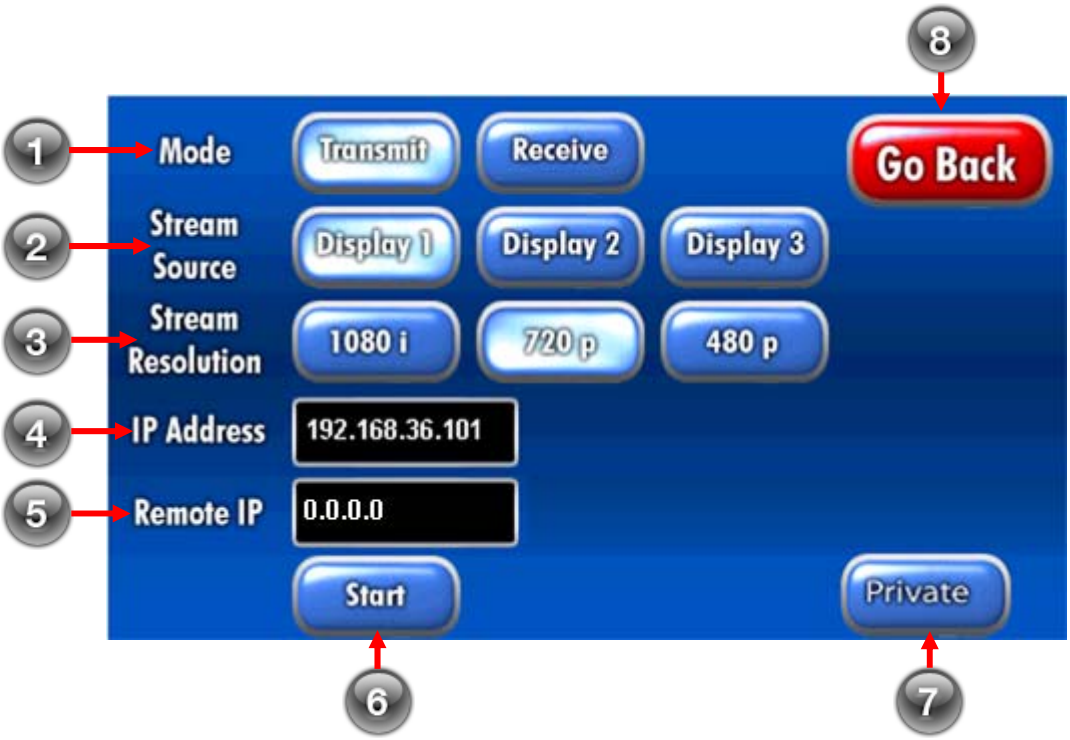
1. Touching the **Factory Defaults** button restores the ConductOR's factory settings.

2. Touching the **Firmware** Update prepares the ConductOR to receive a firmware update.

3. Touch the **Go Back** button to return to the **Home** screen.

IP Streaming Screen

Touch the **IP Streaming** icon on the **Home** screen (page 9) to display the **IP Streaming** screen. If the "Streaming subsystem is initializing" message appears, it will clear in approximately 30 seconds and the **IP Streaming** screen will be displayed.



1. On the **Mode** row, touch **Transmit** to send data to the network or touch **Receive** to receive data from the network. **Note:** When **Receive** mode is selected, **Stream Resolution** has no effect and **Stream Source** is disabled.

2. On the **Stream Source** row touch **Display 1**, **Display 2** or **Display 3** to select the output whose data will be sent to the network.

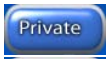
3. Set **Stream Resolution** to **1080i**, **720p** or **480p** to match the receiving device's capabilities.

4. The **IP Address** may be set via DHCP (default) or via the **ConfigOR-G2** program (page 29).

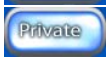
5. The **Remote IP** address is set using the **ConfigOR-G2** program (page 29).

6. The **Start** button is used to establish an IP link between two **ConductOR**'s. The text in the **Remote IP** window turns green when the link is established. **Note:** The **Start** button is used only for connecting two **ConductOR**'s together.

7. Touching the **Private** button turns the streaming video and audio on or off. The default is on.

   Video and audio are on

   Video and audio are off

8. Touch the **Go Back** button to return to the **Home** screen.

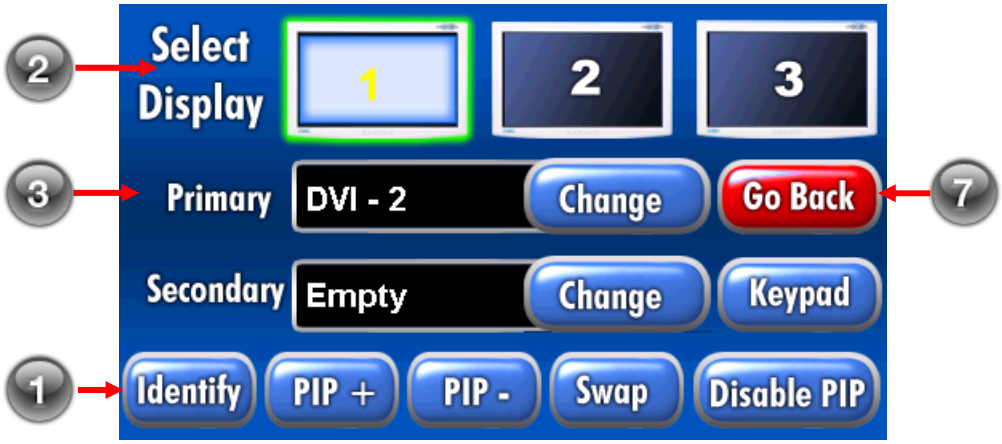
Basic Operation

The section describes the basic operation of the **ConductOR**.

Input Selection

Select a primary input by touching the **Select Inputs** icon, shown below, on the **Home** screen (page 9)

1. Touch the **Identify** button, a yellow number appears on each display connected to the **ConductOR**. The number clears after 5 seconds. Displays connected to **OUT 3** and **OUT 4** will show a 3.
2. On the **Select Display** row, touch the Display 1 icon. Display 1 is used for illustration.
3. On the **Primary** row, touch the **Change** button.
4. The **Primary Input** screen is displayed.
5. On the **Primary Input** screen select the input and touch its button. The **DVI 2** button is used for illustration.
6. Touch the **Go Back** button on the **Primary Input** screen to return to the **Select Inputs** screen.
7. Touch the **Go Back** button on the **Select Inputs** screen to return to the **Home** screen (page 9)



PIP and Swap

Selecting a secondary (PIP) image:

Touch this button on the **Secondary** row of the **Select Inputs** screen (page 16) to open the **Secondary Input** screen, shown below. Touch the input button whose data you want to display as the secondary (PIP) image. A small PIP image appears in the upper right corner of the display (see Small PIP below). 1 A "grayed" out button may not be selected as a secondary input.

Touch this button to return to the **Select Inputs** screen.

Controlling the PIP image:

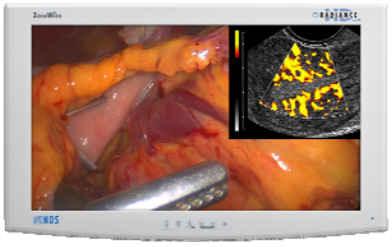
The secondary (PIP) image size is controlled by touching **PIP +** and **PIP -** buttons on the **Select Inputs** screen (page 16). Touching the **PIP +** button will step to the next larger PIP image until only the primary image (See Full Screen below) is visible. Touching the **PIP +** button again will display a Small PIP image in the upper right corner of the display. The **PIP -** button reverses the **PIP +** operation.

Touching the **Swap** button (page 16) will exchange the primary and secondary inputs on the monitor. Touching the **Swap** button a second time will restore the inputs to their original locations. It is not necessary for both images to be displayed in order to swap primary and secondary images.

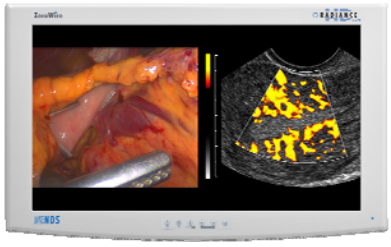
Turn the PIP image off by touching the **Disable PIP** button (page 16).

Small PIP

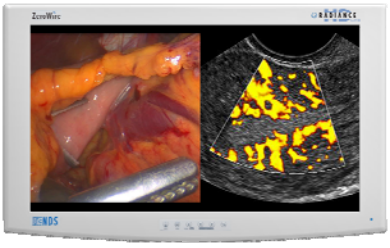
Large PIP



Split Screen



Split Screen + Overscan



Full Screen

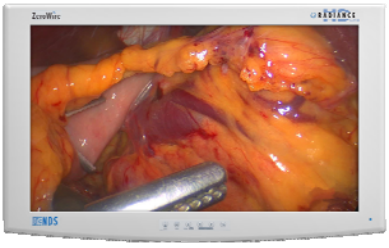


Image Adjustments

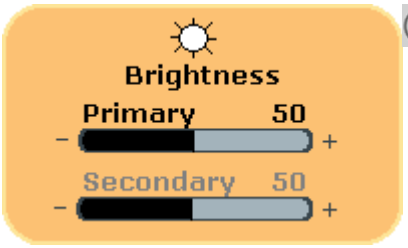
Select the **Keypad** screen as described on page 13.

Touch this button to identify the output you want to adjust. **Note:** The identify function requires that a monitor be connected to at least one of the four outputs.

On the **Select Display** row touch the display icon that corresponds to the output whose brightness and / or contrast will be adjusted, connect a monitor to the output that will be adjusted. The **Keypad** screen below shows output 1 selected.
Follow the Adjust Brightness and / or Adjust Contrast procedure, below, to adjust the brightness and / or contrast of the selected output. To adjust another output, identify it, then touch its display icon.

Touch this button to return to the **Select Inputs** screen (page 16)

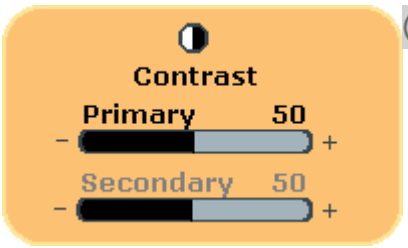
Adjust Brightness



Touch the **Brightness / Contrast** button to display the Brightness control menu. Touch the ◄ or ► button to adjust Primary brightness. When a PIP image is visible, touch the **Brightness / Contrast** button again to access the Secondary brightness control.

Setting the brightness too high or too low will decrease the amount of visible grayscales.

Adjust Contrast



Touch the **Brightness / Contrast** button twice, three times when a PIP image is visible, to display the Contrast control menu. Touch the ◄ or ► button to adjust Primary contrast. When a PIP image is visible, touch the **Brightness / Contrast** button again to access the Secondary contrast control.

Setting the contrast too high or too low causes loss of some grayscales. Color saturation may appear incorrect.

On Screen Display Overview

Select the **Keypad** screen as described on page 13.

1. On the **Select Display** row touch the display icon for the output whose parameters will be adjusted.

Touch the **MENU** button once to open the On Screen Display (OSD). The OSD's default location is the lower left corner of the monitor connected to the selected output. The active (**DISP 1:**, **DISP 2:** or **DISP 3:**) output 's, primary input is shown in black at the top left of the OSD. If there is an active secondary input, it will be shown in gray at the top right of the OSD. The four available OSD menus are: Picture, Color, Setup, Defaults

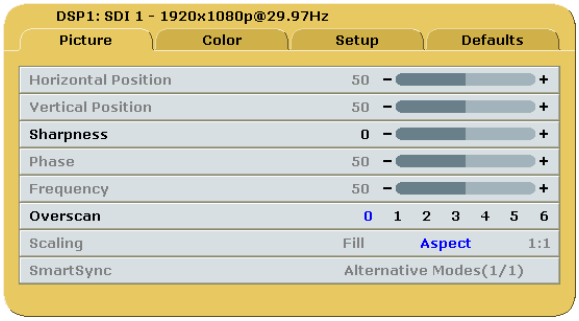
2. The OSD opens with the Picture menu displayed. The menus are shown below. Touch the ◄ or ► button to select the menu you want to work with.

Touch the **SCROLL** button to select the parameter. Touch the ◄ or ► button to set the parameter to the desired value. Touch the **MENU** button to save your changes and close the OSD. **Note:** Grayed out parameters are not accessible.

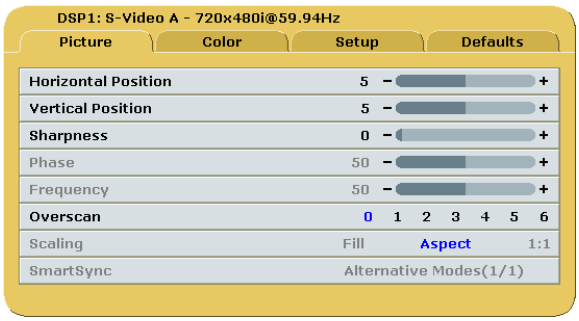
7

Display Setup

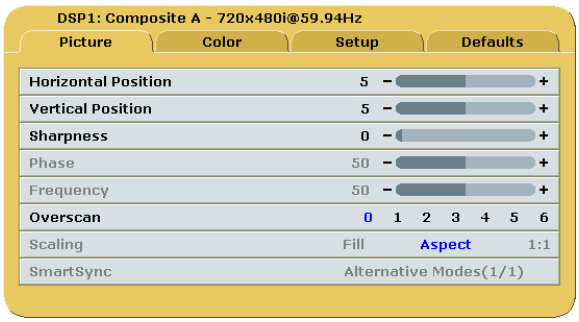
SDI Picture Menu



S-Video Picture Menu



Composite Picture Menu



Horizontal Position

Moves the image to the left or right. Touch ◄ or ► to horizontally center the image. **Note:** This parameter is not available for SDI inputs.

Vertical Position

Moves the image up or down. Touch ◄ or ► to vertically center the image. **Note:** This parameter is not available for SDI inputs.

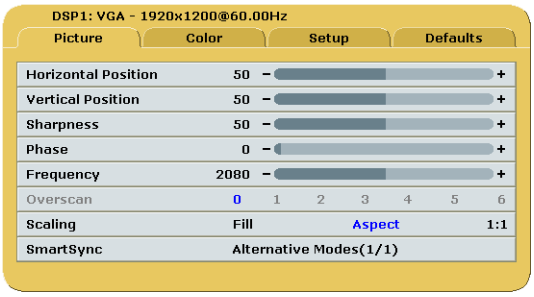
Sharpness

Touch ◄ or ► to adjust the sharpness (focus) of the displayed image.

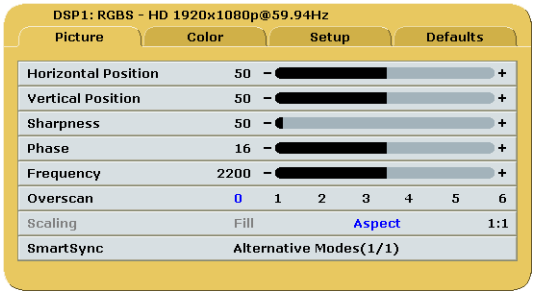
Overscan

0 = The image is displayed at a size that fills the screen without losing any video information. The image presented to the display may include black bars top and bottom or left and right.
1, 2, 3, 4, 5 or **6** = The image is linearly enlarged, while remaining centered, in incremental steps. As the image becomes larger video information will be lost from the top and bottom and / or left and right. Select using ◄ or ► buttons.

VGA / SOG Picture Menu



RGBS / YPbPr Picture Menu



Horizontal Position
Moves the image to the left or right. Touch ◄ or ► to horizontally center the image.

Vertical Position
Moves the image up or down. Touch ◄ or ► to vertically center the image.

Sharpness
Touch ◄ or ► to adjust the sharpness (focus) of the displayed image. **Note:** When the VGA input is active Sharpness cannot be adjusted when the display is operating at native resolution.

Phase
Touch ◄ or ► to adjust the phase of the display's pixel clock.

Frequency
Adjusts the frequency of the display's pixel clock. With Scaling set to **Fill** adjust until image just fills the screen horizontally. Touch ◄ or ► to adjust the frequency of the display's pixel clock.

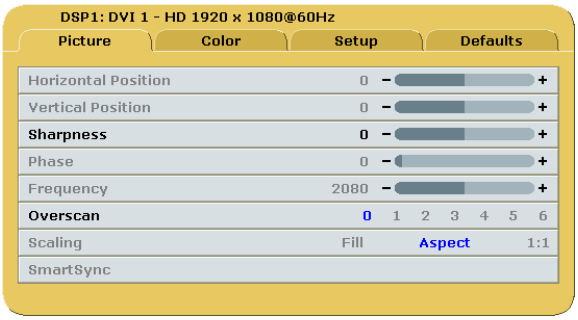
Scaling (Graphics)
This parameter is enabled when the input is graphics (computer) data.
Fill = Expands the video image to fill the entire screen. The aspect ratio may not be accurately displayed.
Aspect = Expands the video image, without changing its aspect ratio, until its largest dimension fills the screen. Black bars may be displayed on the top and bottom or the left and right of the image.
1:1 = Displays the video data in its native size and aspect ratio. Image may be displayed with black bars on the top and bottom and on the left and right. Select using ◄ or ► buttons.

Overscan (Video)
This parameter is enabled when the input is video (camera) data.
0 = The image is displayed at a size that fills the screen without losing any video information. The image presented to the display may include black bars top and bottom or left and right.
1, 2, 3, 4, 5 or **6** = The image is linearly enlarged, while remaining centered, in incremental steps. As the image becomes larger video information will be lost from the top and bottom and / or left and right. Select using ◄ or ► buttons.

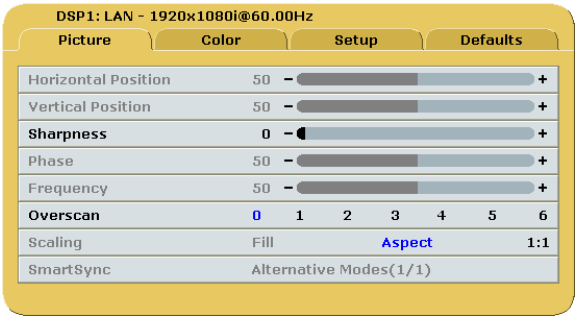
SmartSync™ / Alternative Modes
On initialization NDS' proprietary SmartSync technology examines the incoming signal and automatically displays the video image in its proper format. To run SmartSync select the SmartSync / Alternative Modes parameter and touch the ◄ button.

To select an alternate mode (format) select the SmartSync / Alternative Modes parameter and touch the ► button. The mode increments each time the ► button is touched until the selected mode equals the maximum available, the next time ► touched the first mode is restored.

DVI Picture Menu



LAN Picture Menu



Overscan (Video)

This parameter is enabled when the input is video (camera) data.

0 = The image is displayed at a size that fills the screen without losing any video information. The image presented to the display may include black bars top and bottom or left and right.

1, 2, 3, 4, 5 or **6** = The image is linearly enlarged, while remaining centered, in incremental steps. As the image becomes larger video information will be lost from the top and bottom and / or left and right. Select using ◄ or ► buttons.

Scaling (Graphics)

This parameter is enabled when the input is graphics (computer) data.

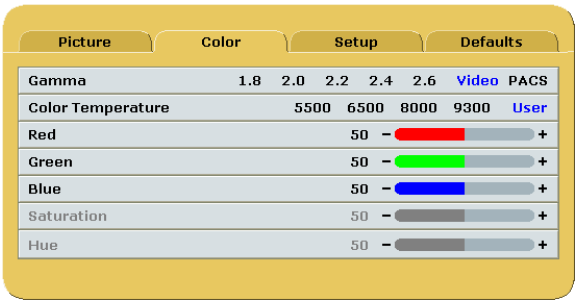
Fill = Expands the video image to fill the entire screen. The aspect ratio may not be accurately displayed.

Aspect = Expands the video image, without changing its aspect ratio, until its largest dimension fills the screen. Black bars may be displayed on the top and bottom or the left and right of the image.

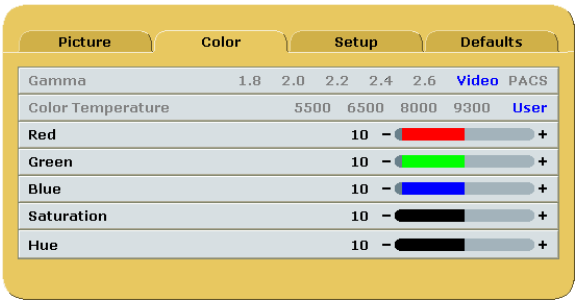
1:1 = Displays the video data in its native size and aspect ratio. Image may be displayed with black bars on the top and bottom and on the left and right. Select using ◄ or ► buttons.

Color Menus

Graphics Color Menu



Video Color Menu



Gamma (Graphic modes only)[1]
Press ◄ or ► to select a preset Gamma value, Video or PACS[3]

Notes:

1. Video is a color corrected Look Up Table (LUT) available with DVI, VGA and SOG.
2. PACS is a DICOM-like* LUT available with DVI, VGA and SOG.
3. Video is not available when the input is SOG.
4. Gamma is preset to Video for video modes and may not be changed.

Color Temperature (Graphic modes only)[1]
Press the ◄ or ► button to select one of the four preset color temperatures or User. Selecting User allows the individual adjustment of the Red, Green and Blue values.

Red, Green, Blue (Video or Graphic modes)
Touch the ◄ or ► button to increase or decrease the intensity of the selected color.

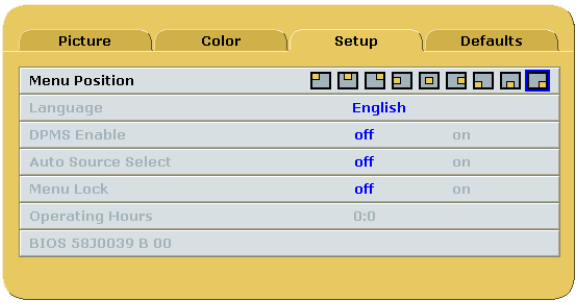
Saturation (Video modes only)[2]
Touch ◄ or ► to set the saturation (color intensity) of the image.

Hue (Video modes only)[2]
Touch ◄ or ► to set the hue (color tint) of the image.

Notes:

1. 1024 x 768, 1280 x 1024 and 1920 x 1200 are some of the graphic modes.
2. A list of Video modes is shown on page 58.
3. This product is capable of passing Radiology (PACS) images to a compatible display. These PACS images are for reference only and may not be used for diagnostic purposes.

Setup Menu



Menu Position
Places the menu in 1 of 9 predefined screen positions. Touch the ◄ or ► button to select any of the 9 screen positions. The default position is in the lower left corner.

Language
The **ConductOR** currently supports English only.

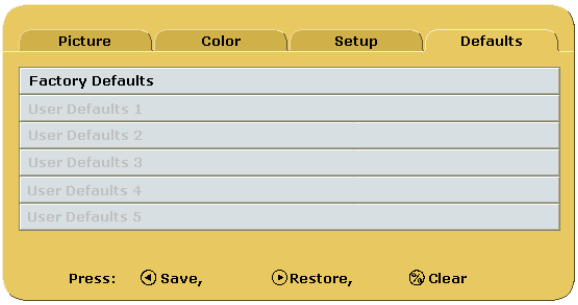
DPMS Enable
Display Power Management System. This function is not supported on the **ConductOR**.

Auto Source Select
This function is not supported on the **ConductOR**.

Menu Lock
The menu may be locked via an external control program.

Operating Hours: This function is not supported on the **ConductOR**.
BIOS: Version of the **ConductOR**'s Scalar firmware.

Defaults Menu



Factory Defaults
Displays Restoring Factory Defaults message and returns all settings to their factory preset values. Touch the **SCROLL** button (page 20) to highlight **Factory Defaults**, then touch the ► button.

User Defaults
This function is not supported on the **ConductOR**.

Utilities

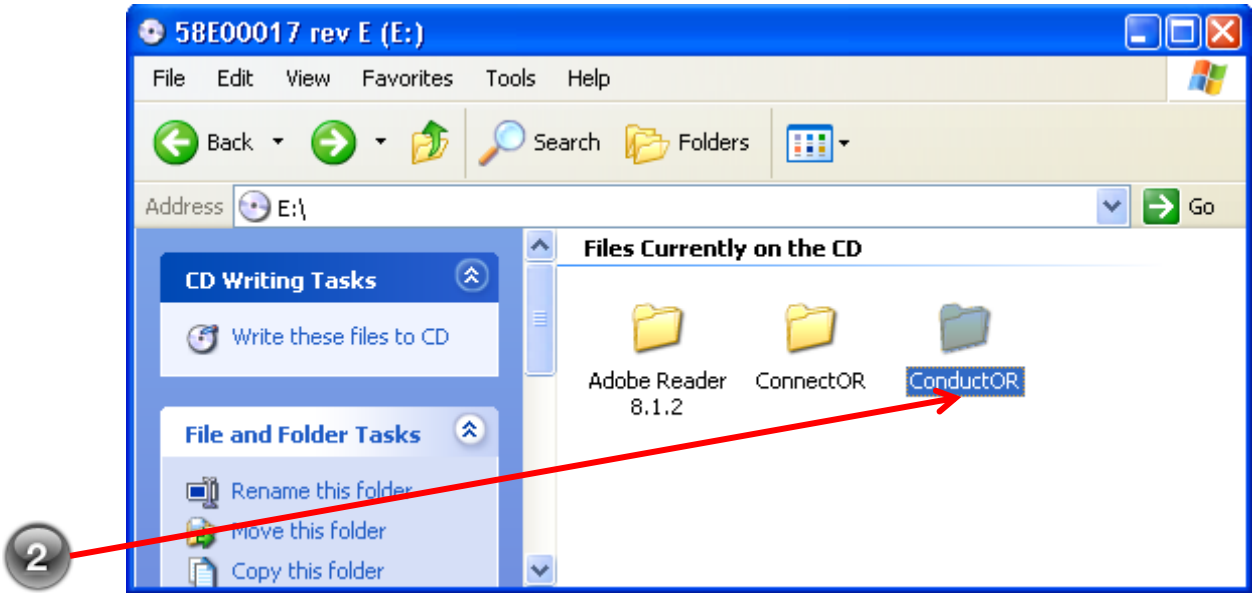
Installing the utility software:

⚠ The programs contained on the CD (P/N 58E0017) are for familiarization, testing, training, installation and troubleshooting. They may not be used during clinical procedures.

Place the supplied Integration Software and Users Manual CD (58E0017) in your PC's CD or DVD drive and double click the My Computer icon.

1. Double click the 58E0017 icon.
2. Double click the ConductOR folder.

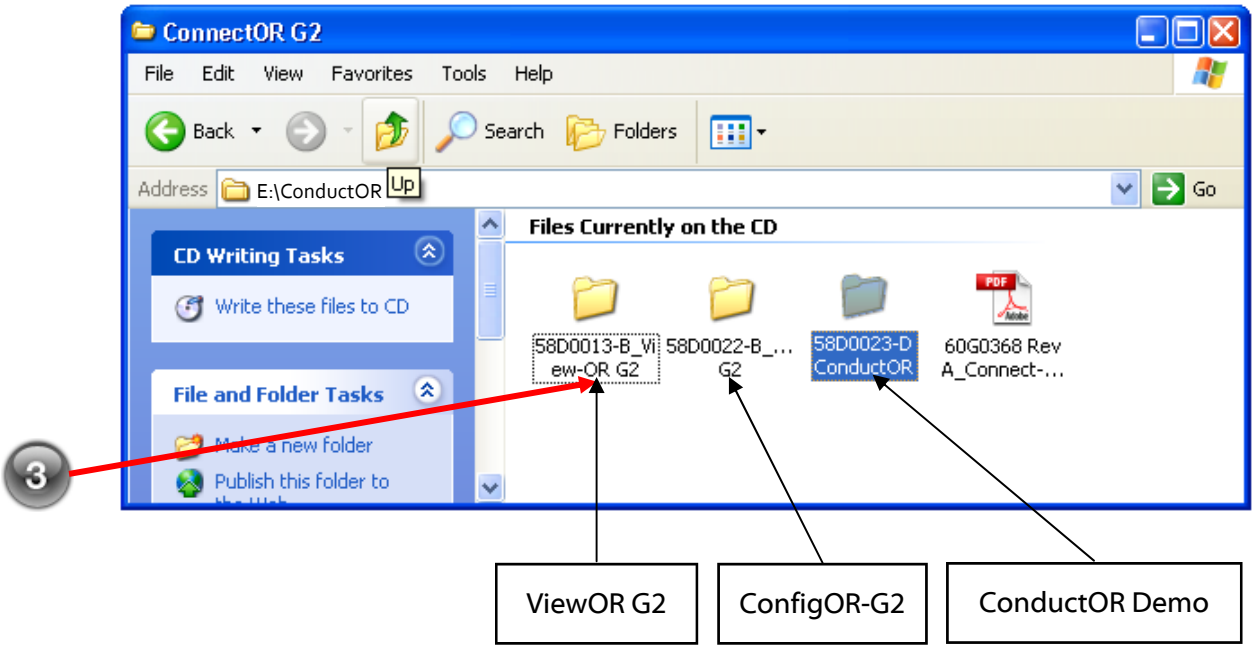
Continued on the following page.

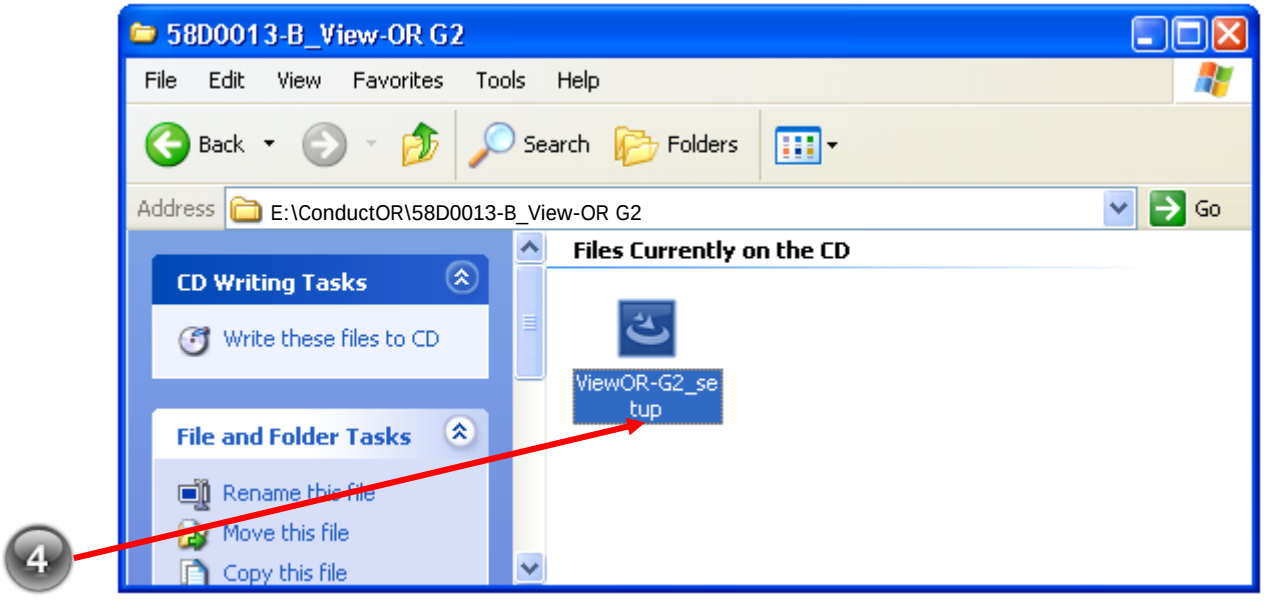


3. Select the software to be installed and double click its folder.

4. Double click the Setup icon. Follow the on screen instructions.

Repeat steps 3 and 4 for each additional software package you want to install.

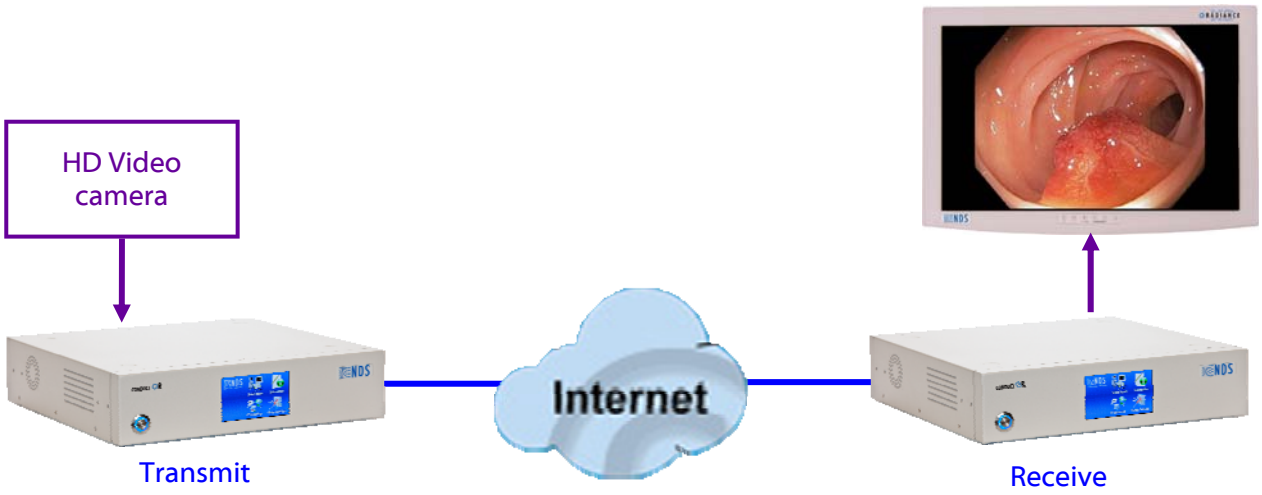




Streaming Video and Audio from Location to Location

Overview:

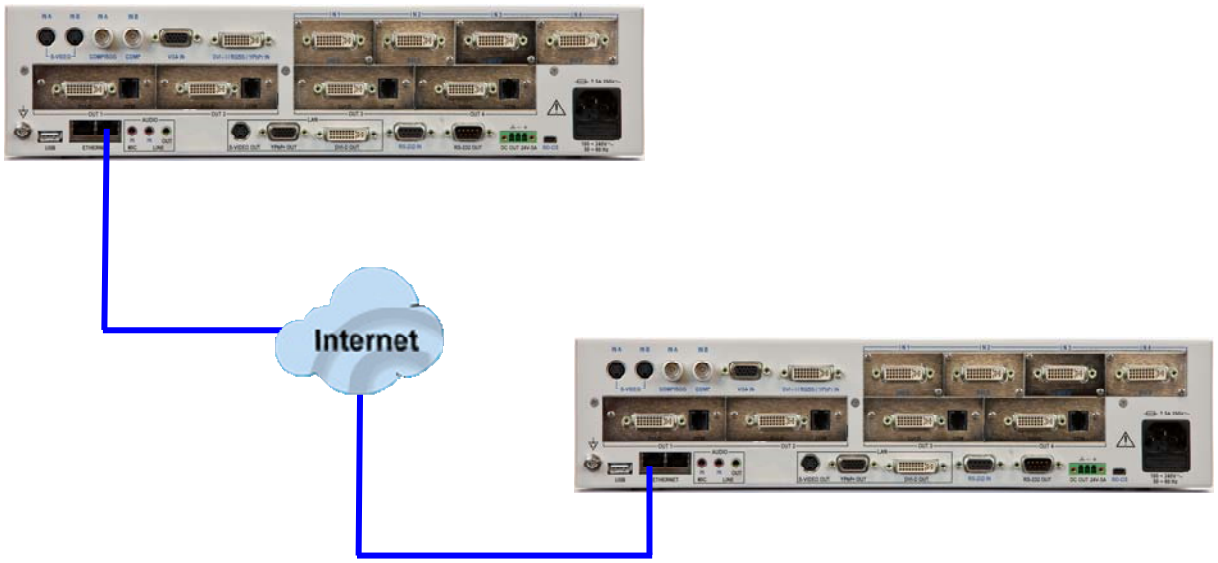
If surgeons or other clinical staff members need to consult with their colleagues at another location and each location has a **ConductOR** available. The **ConductOR**s may be connected via your internal network or the Internet for the purpose of video and audio communication. Video transmitted from the **ConductOR** designated as 'Transmit' and video viewed on the **ConductOR** designated as 'Receive'. The audio is bidirectional, allowing the staff at each location to converse with each other.



9 Location to Location Network Connections

Connect the **ConductOR** units to your facility's internal network using Category 5 Ethernet cable. **Note:** For clarity only the Network connections are shown in the illustration below.

Software Setup is detailed on the following pages.



Software Setup

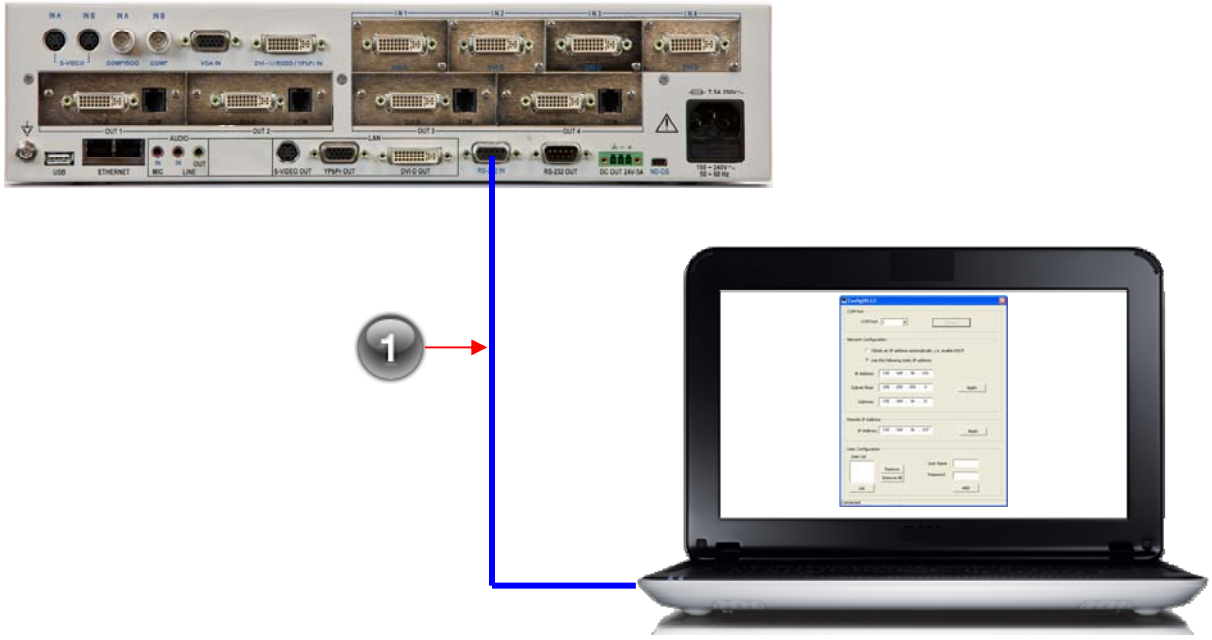
Except as noted, IP addresses, and **ConductOR** input and output selections in the following instructions are for illustration.

When the **ConductOR** is connected to your IP network and powered on, the network will automatically assign it an IP address via its Dynamic Host Configuration Protocol (DHCP) feature*.

1. Connect an RS-232 cable from your PC to the **ConductOR**'s **RS-232 IN** connector.

Continued on the following pages

* A DHCP assigned IP address may change if the **ConductOR** is disconnected from the network and reconnected or if it is turned off.



Location to Location Transmit Setup

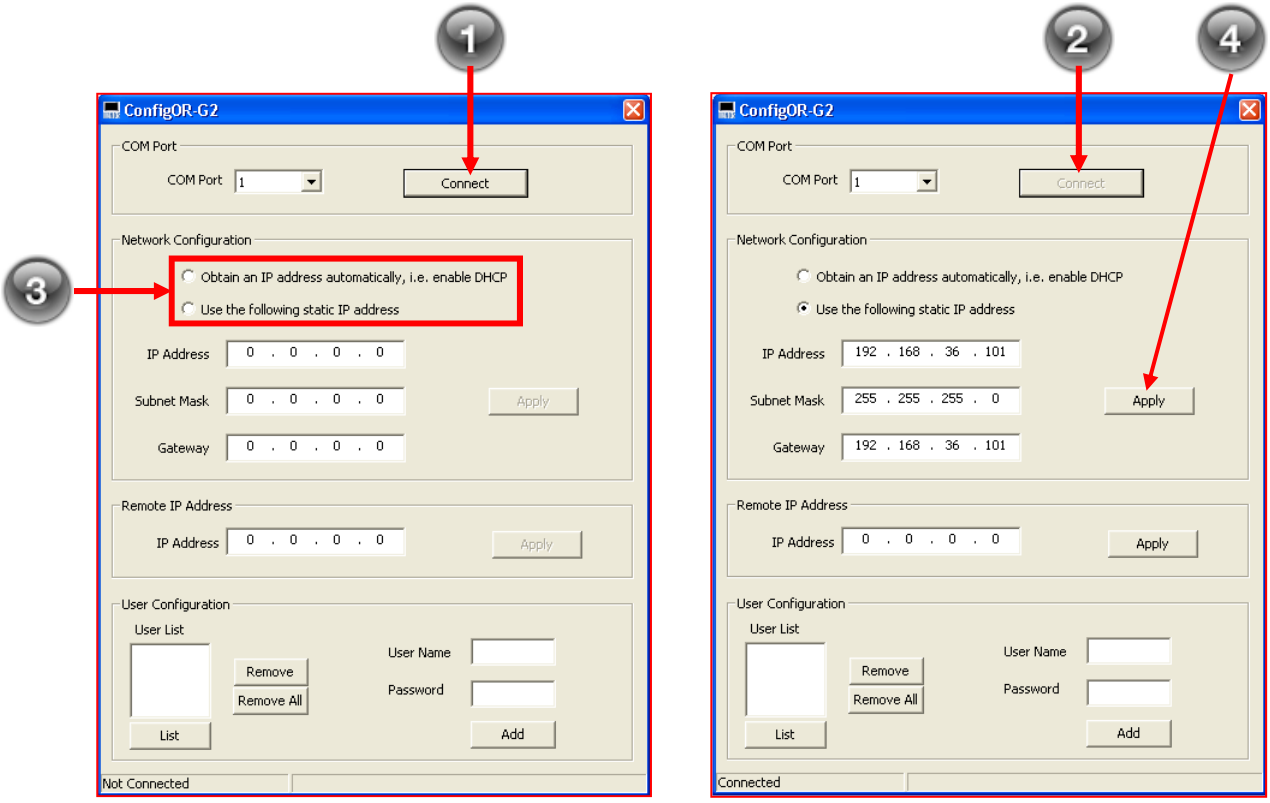
Note: The IP addresses that appear in the screen shots on this and following pages are for illustration only.

1. Launch the **ConfigOR-G2** program, the program's startup screen should look like the left screen shot below. A **Not Connected** message will be shown in its lower left corner
   Click the pull down arrow on the right side of the **COM Port** window and select the COM port to be used. Finally, click the **Connect** button.

2. A successful connection will 'gray out' the **Connect** button, fill in the IP Address, Subnet Mask and Gateway windows. A dot appears in the radio button to the left of "Use the following static IP address". The message in the lower left corner will change to: **Connected**. Close the **ConfigOR-G2** program.

3. Click the radio button to the left of "Obtain an IP address automatically….". You may manually assign the IP Address, Subnet Mask And Gateway by clicking the radio button to the left of "Use the following static IP address" and entering the required information. Finally, click the **Connect** button.

Location to Location Receive is described on the following page.



Location to Location Receive Setup

Move the RS-232 cable to the **Receive** unit's **RS-232 IN** connector (page 30). Launch the **ConfigOR-G2** program, described on the previous page. Select the COM port to be used, then click the **Connect** button.

4. Click the Connect button, a successful connection will 'gray out' the **Connect** button, fill in the IP Address, Subnet Mask and Gateway windows. The message in the lower left corner will change to: **Connected**.

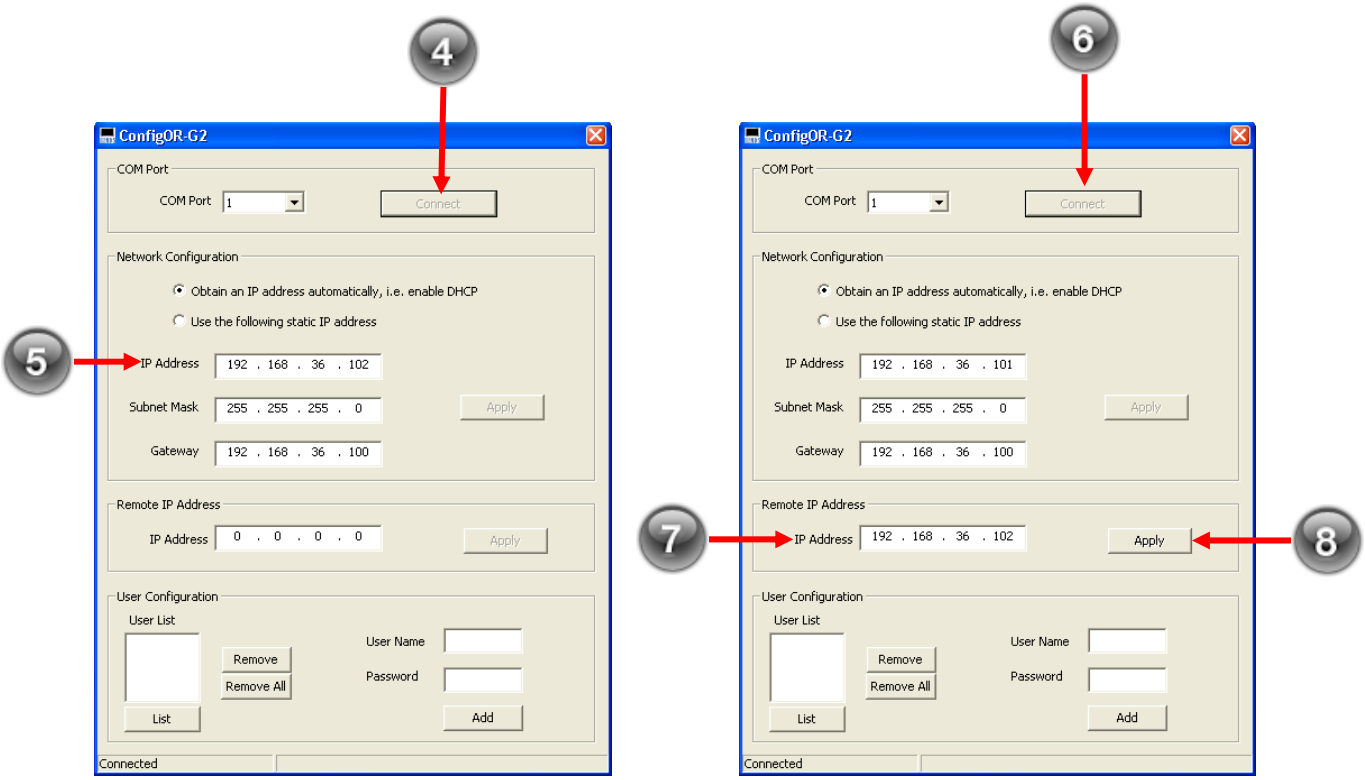
5. Note the **Receive** unit's IP Address. Close the **ConfigOR-G2** program.

6. Move the RS-232 cable back to the **Transmit** unit's **RS-232 IN** connector (page 30). Launch the **ConfigOR-G2** program, select the COM port to be used, then click the **Connect** button.

7. Type the **Receive** unit's IP address into the **IP Address** window in the **Remote IP Address** frame. Optionally, the **Transmit** unit's IP address may be entered in the **Receive** unit's **IP Address** window in the **Remote IP Address** frame. Doing so allows streaming to be initiated or terminated from the **Transmit** or the **Receive** unit.

8. Click the **Apply** button . Close the **ConfigOR-G2** program. This completes the software setup.

Establishing a Streaming Connection is described on the following pages.



Location to Location Streaming

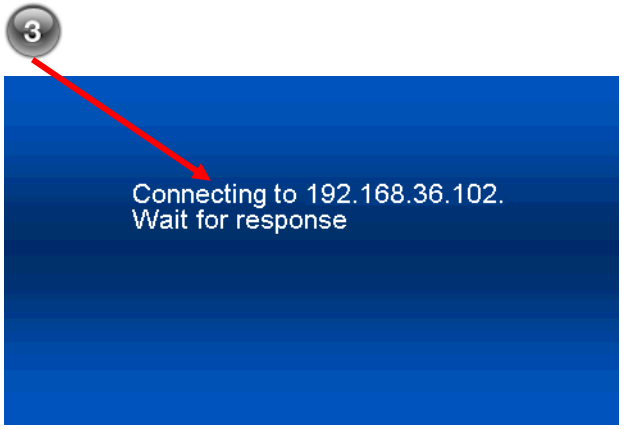
Note: The following steps assume that you are continuing from the Software Setup section.

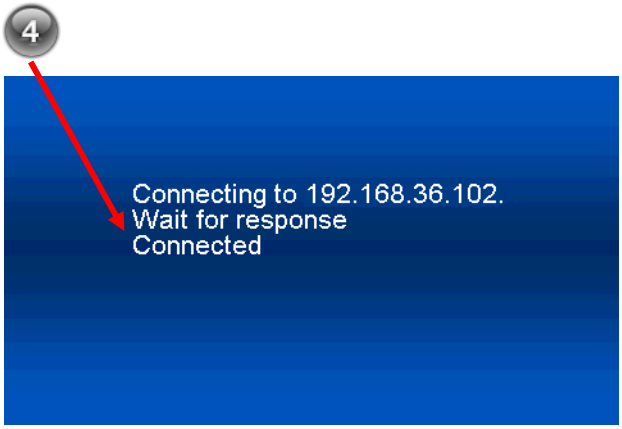
1. Touch the **IP Streaming** icon on the **Transmit** unit's **Home** screen (page 9). When the **IP Streaming** screen is displayed, select:
2. On the **Mode** row, select Transmit by touching the **Transmit** button.
3. On the **Stream Source** row select the **Display** (output) to be used as the streaming source.
4. On the **Stream Resolution** row, select the stream resolution **1080i**, **720p** or **480p**.
5. The IP address is displayed in the **IP Address** row window should be the same as the IP address that was assigned when you ran the **ConfigOR–G2** program (page 29).
6. Touch the **IP Streaming** icon on the **Receive** unit's home screen (page 9). When the **IP Streaming** screen is displayed, select **Receive** on the **Mode** row. **Stream Source** is disabled in receive mode . **Stream Resolution** will be automatically set to match the resolution of the inbound stream.
7. The IP address is displayed in the **IP Address** row's window should be the same as the IP address that was assigned when you ran the **ConfigOR–G2** program (page 29).

Continued on the following page.

1. Touch the **Start** button.
2. The legend on the button changes to **Stop**.
3. The "Connecting to…." screen is displayed.
4. When the "Connected" screen is displayed, streaming has started.

Continued on the next page.





The **Transmit** unit's IP Streaming and the **Receive** unit's screens while streaming is in progress are shown below.

1. The **Transmit** unit's **Remote IP** window holds the address of the **Receive** unit's IP address. The **Receive** unit's address changes to green when an connection is established.

2. The **Receive** unit's **Remote IP** window remains empty.

3. Touch the **Stop** button to stop streaming data to the **Receive** unit.

Note: If the **Transmit** unit's IP address appears in the **Receive** unit's **Remote IP** window, then streaming may be initiated or terminated from either unit. Setting a Remote IP address is described on page 29.

Streaming video and audio are described on the following pages.

Streaming Video

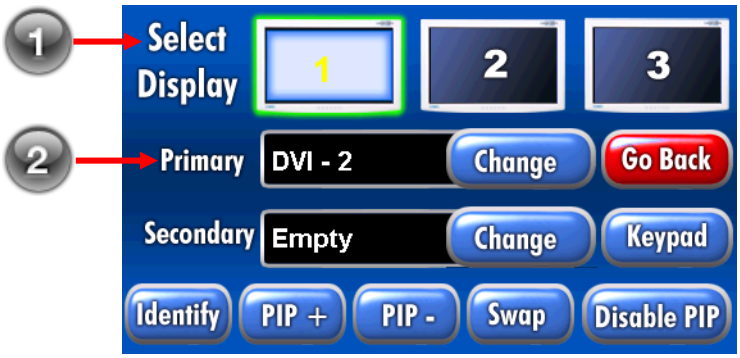
Note: The following steps assume that you are continuing from the previous page.

Comment: In the Transmit Unit Setup section, Display 1 and the DVI-2 input are used for illustration.

Transmit Unit Setup:
Connect a DVI signal source to the **Transmit** unit's DVI-2 connector. Connect the **Transmit** unit's **OUT 1** (Connector Panel is shown on page 3) to a compatible display. On the **Home** screen (page 9), touch the **Select Inputs** icon**.** Verify that the resolution of the selected output is **1080**. (See page 14)

1. On the **Select Display** row touch the Display 1 icon.
2. On the **Primary** row touch the **Change** button.
3. The **Primary Input** screen is displayed. Touch the DVI-2 button.
4. Finally, touch the **Go Back** button to return to the **Select Inputs** screen. Verify that DVI-2 appears in the **Primary** row window. An image of the DVI signal should be shown on the connected display. This completes the **Transmit** unit setup.

Receive Unit Setup is described on the following page.

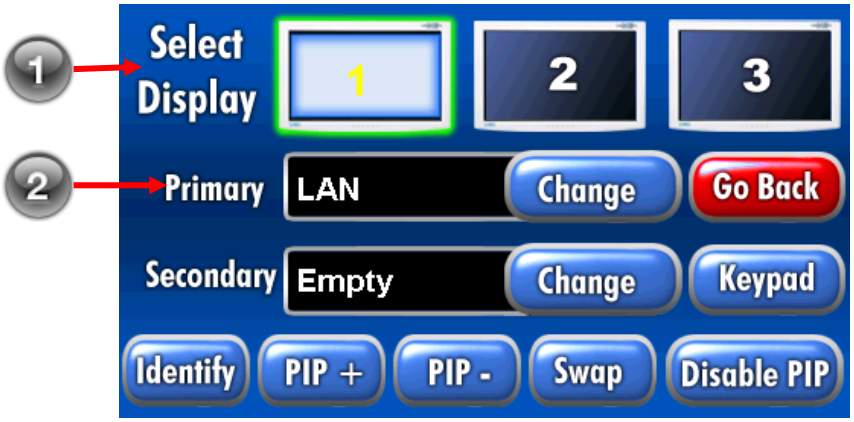


Comment: In the Receive Unit Setup section, Display 1 is used for illustration.

Receive Unit Setup:
Connect the **Receive** unit's **OUT 1** (Connector Panel is shown on page 3) to a compatible display. On the **Receive** unit's **Home** screen (page 9) touch the **Select Inputs** icon.

1. On the **Select Display** row touch the Display 1 icon.
2. On the **Primary** row touch the **Change** button.
3. The **Primary Input** screen is displayed. Touch the **LAN** button. Finally, touch the **Go Back** button to return to the **Select Inputs** screen.
4. Verify that **LAN** appears in the **Primary** row window. An image of the DVI signal applied to the **Transmit** unit's DVI-2 input (page 28) should appear on the display connected to the **Receive** unit's **OUT 1**.

Streaming Audio is described on the following page.

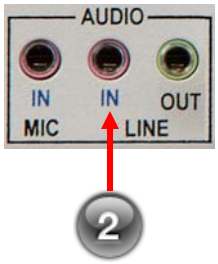


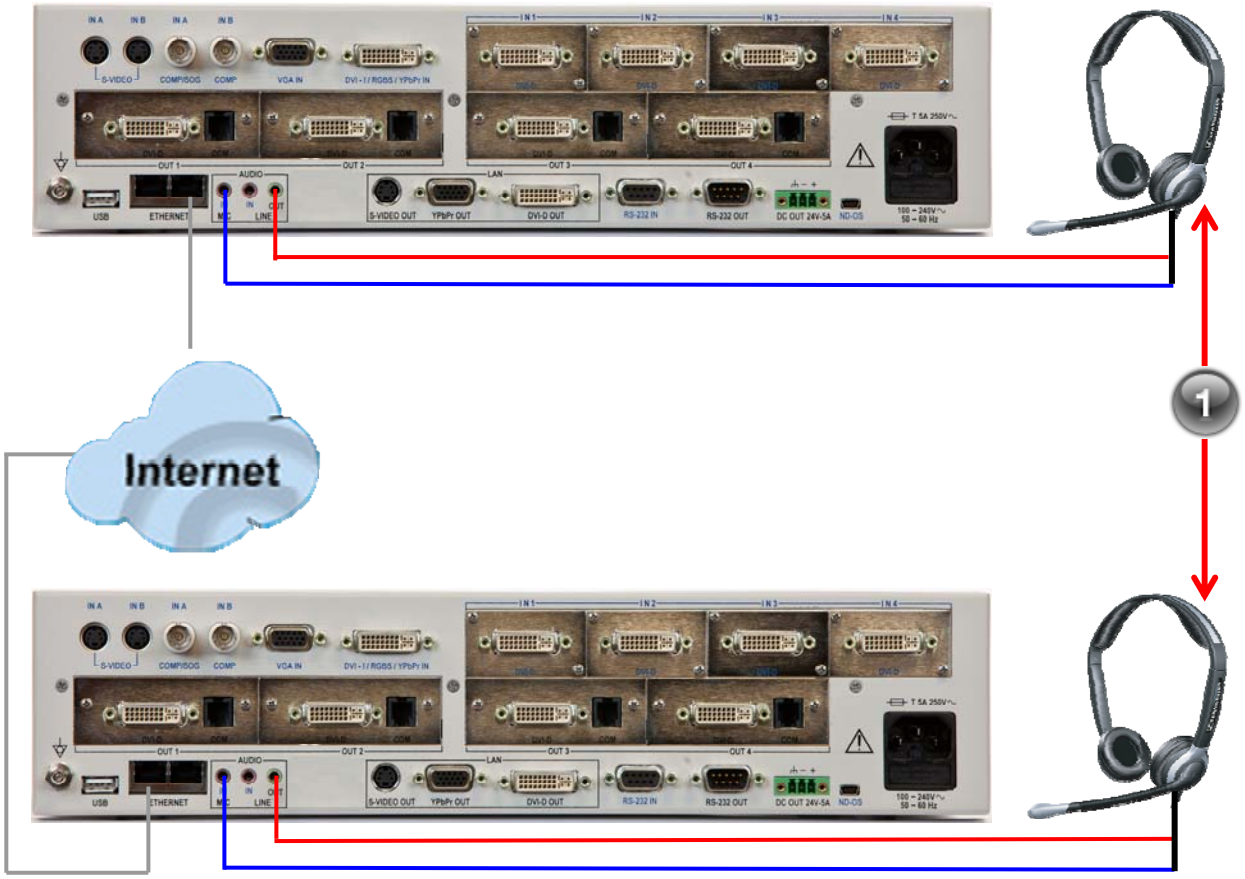
Streaming Audio

Use the setup described in the **Streaming Video** section (pages 27).

1. Connect a microphone (blue line) to the **AUDIO IN MIC** connector of both units and a set of headphones (red line) to the **AUDIO OUT** connector of both units. Speak into the microphone connected to the **Transmit** unit and you should hear your voice in the headphones connected to the **Receive** unit. Now speak into the microphone connected to the **Receive** unit and you should hear your voice in headphones connected to the **Transmit** unit. **Note:** An amplifier and a speaker may be substituted for the headphones.

2. **AUDIO IN** is not used.

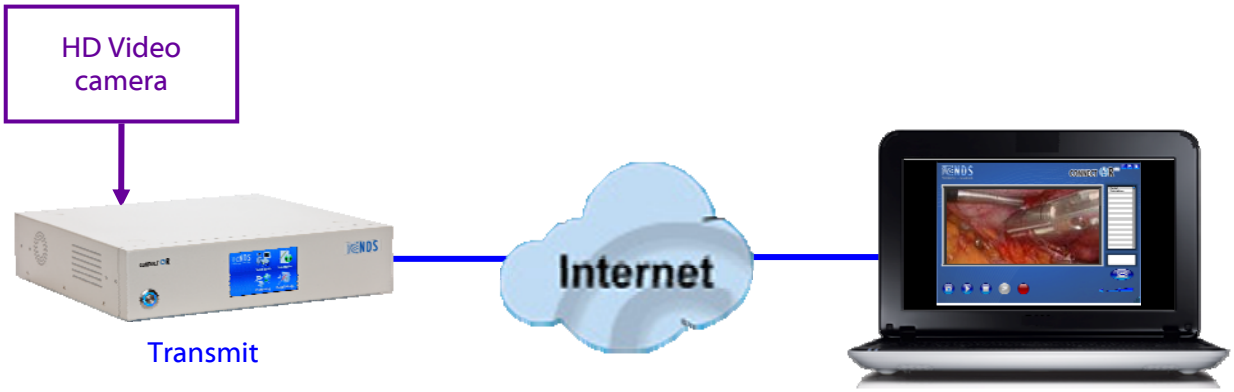




Streaming from ConductOR to a PC

Overview:

During a surgical procedure the surgeon performing the procedure may need to consult with one or more colleagues at other locations. If the colleagues have a PC, Internet connection and **ViewOR** available, they will be able to observe the procedure in real time and provide assistance as needed.



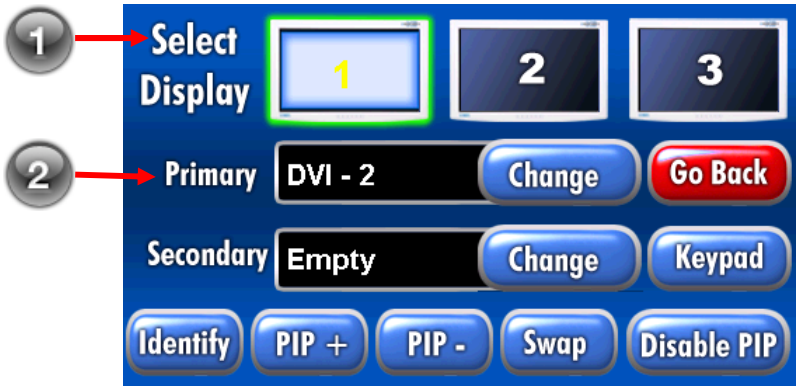
ViewOR G2 Setup and Usage

Preparing the ConductOR:

Connect the **ConductOR** (unit) to your network then connect the network to your PC using Ethernet cables. Turn the PC and unit on. Connect a compatible signal source to the unit's DVI 2 input. Connect the unit's **OUT 1** (see connector panel on page 3) to a compatible display. Finally, on the **Home** screen (page 9), touch **Select Inputs** icon.

1. On the **Select Display** row touch the Display 1 icon.
2. Touch the **Change** button on the **Primary** row.
3. The **Primary Input** screen is displayed. Touch the DVI 2 button. An image of the signal applied to DVI 2 should be shown on the connected display.

Continued on the following page.



Settings in the following procedure are for illustration.

Touch the **IP Streaming** icon on the **Home** screen (page 9) to access the **IP Streaming** screen.

1. On the **Mode** row, touch the **Transmit** button.
2. Select **Display 1** on the **Stream Source** row.
3. Select **720p** on the **Stream Resolution** row.
4. Touch the **Go Back** button to return to the **Home** page.

Continue on the following page.

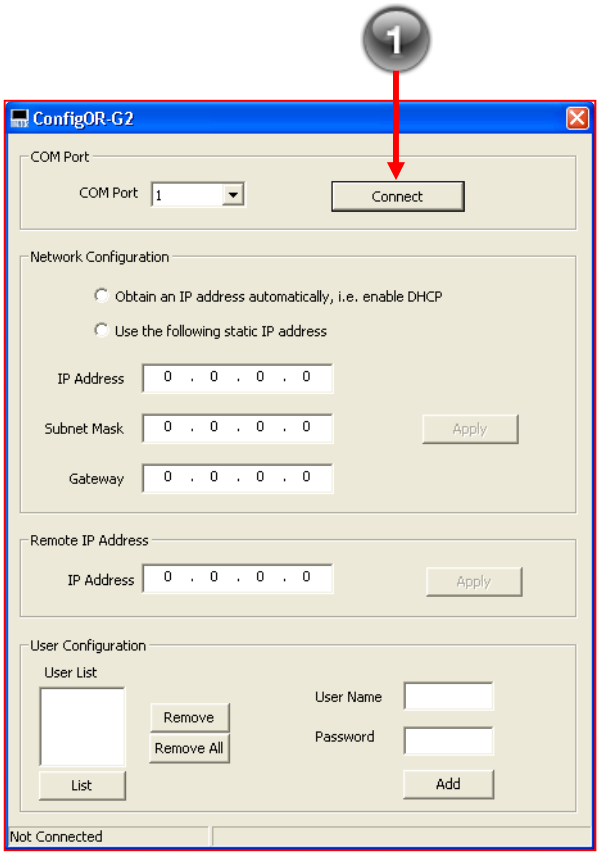
ConfigOR Setup

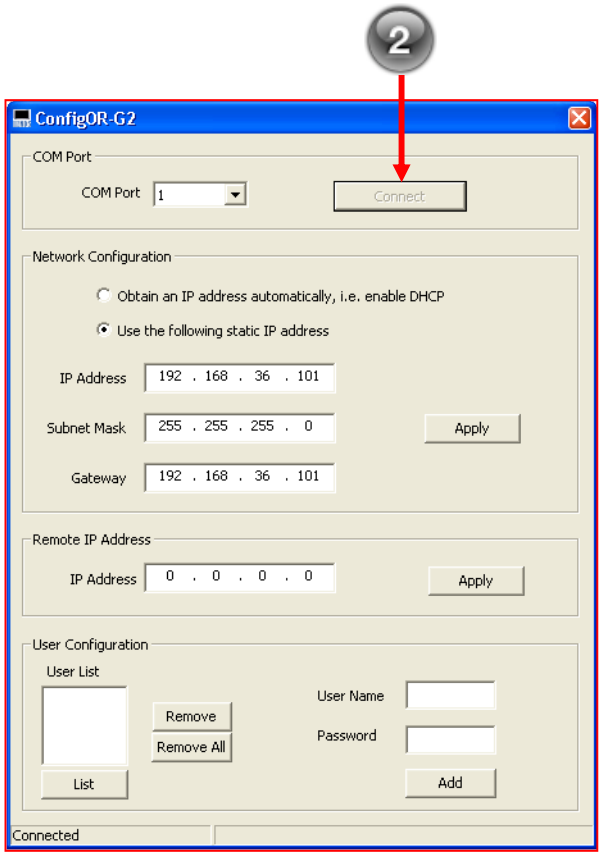
1. Launch the **ConfigOR-G2** program (page 29), the program's startup screen should look like the left screen shot below. A **Not Connected** message will be shown in its lower left corner
   Click the down pull arrow on the right side of the **COM Port** window and select the COM port to be used. Finally, click the **Connect** button.

2. A successful connection will 'gray out' the **Connect** button, fill in the IP Address, Subnet Mask and Gateway windows. The message in the lower left corner will change to: **Connected**. Close the **ConfigOR-G2** program.

Continue at Using the ViewOR G2 Program on the following page.

Note: The IP addresses that appear in the screen shots on this and following pages are for illustration only.



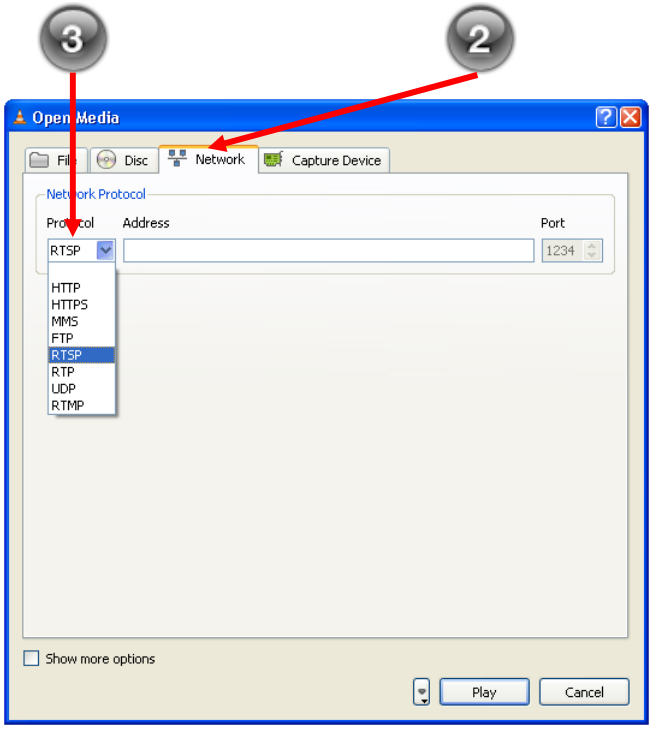


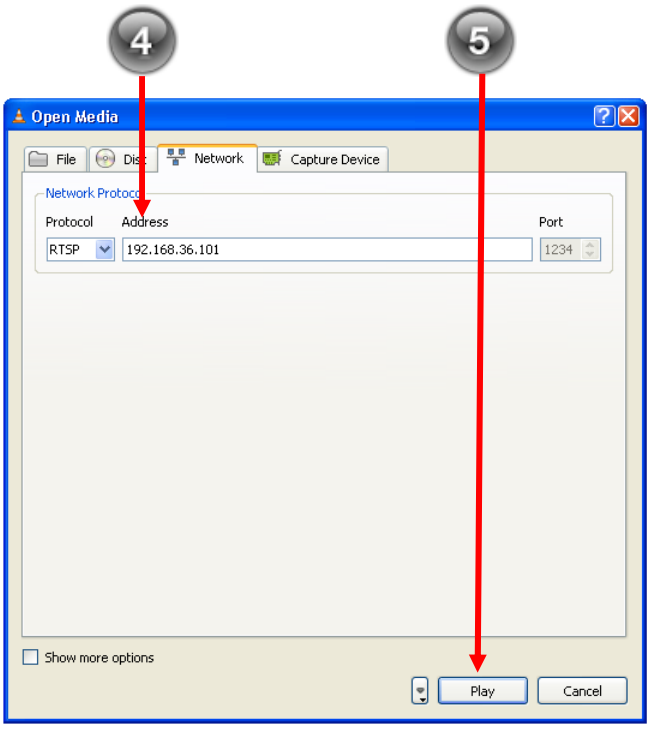
Using the ViewOR G2 Program

The **ViewOR G2** *program must be run on a PC, it is not currently compatible with Apple™ computers*
Double click the **ViewOR G2** icon to launch the program.

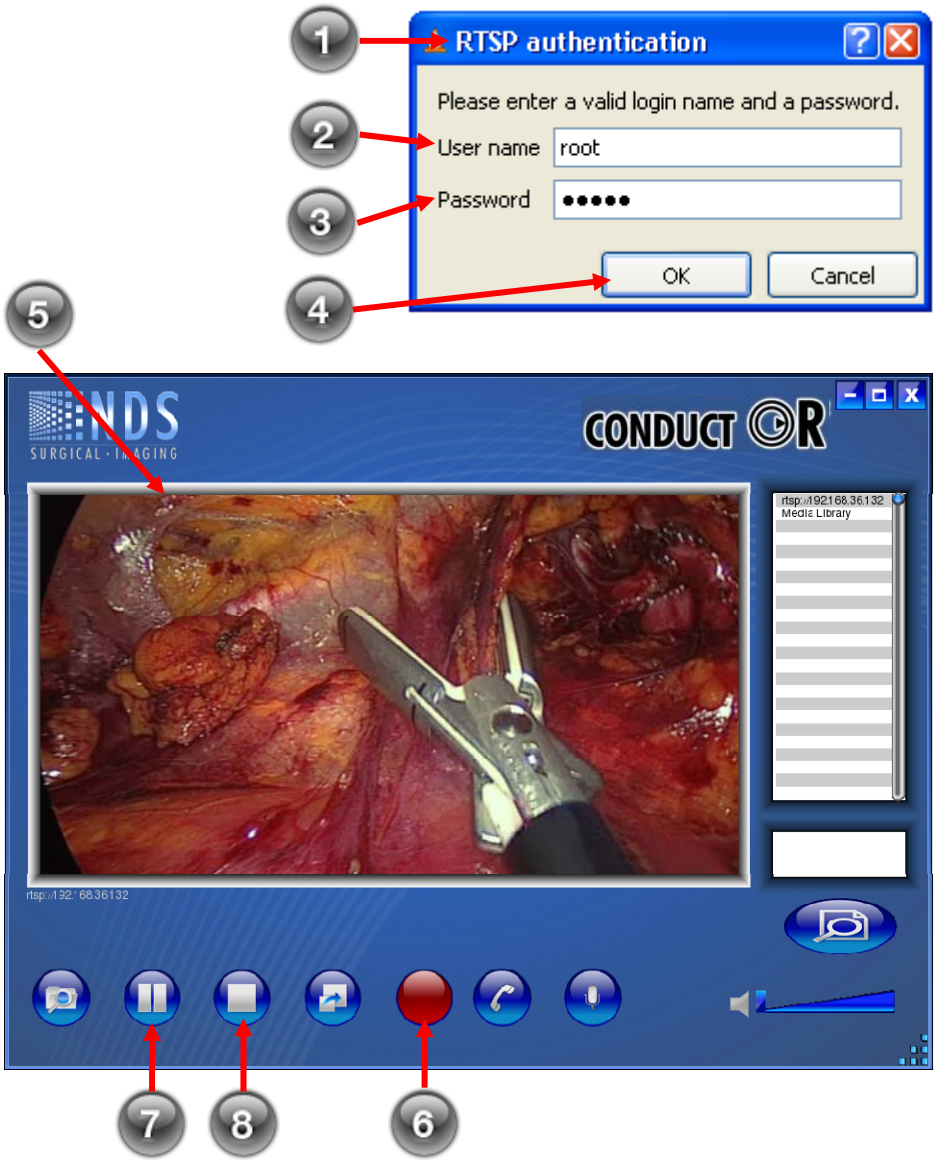
1. Click the ► button, the **Open Media** window is displayed.
2. Click the **Open Media** window's **Network** tab.
3. Select RTSP from the **Protocol** pull down menu.
4. Type the IP address obtained or entered in the previous section into the **Address** window.
5. Click the **Open Media** window's **Play** button.

Continued on the following page.

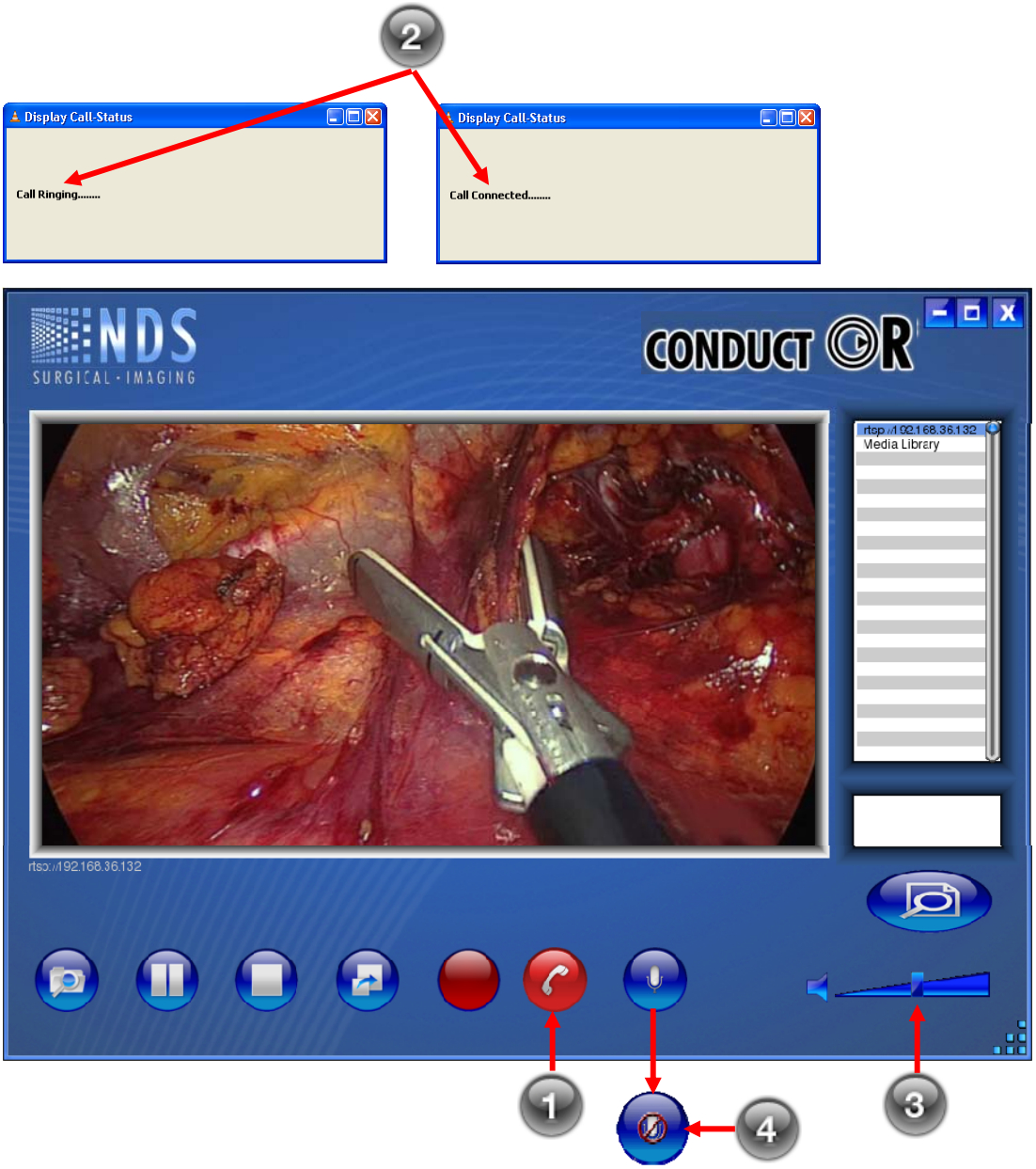




1. The **RTSP authentication** window is displayed.
2. In the **User name** window, type: root (all lower case).
3. In the **Password** window, type: admin (all lower case).
4. Click the **OK** button.
5. A copy of the image on display 1 is displayed in the **ViewOR G2** viewing area. **Note:** It takes up to 15 seconds before an image is displayed.
6. Record the video by clicking the record button, the record button starts flashing. Recording stops when the record button is clicked again. Default file name: vlc-record-2011-03-08-09h28m56s-rtsp___192.168.36.208-
   Header: vlc-record- Time Code: 2011-03-08-09h28m56s-
   Protocol: rtsp IP Address: 192.168.36.208
7. Click the **II** button to pause the streaming video.
8. Click the ■ button to stop the streaming video.



1. Click the **Telephone Handset** button to open a two way audio path.
2. The button turns red and a Call Ringing message appears. Call Connected appears when the audio connection is established.
3. Place the cursor over the Volume slider, hold the left mouse button down and set the volume to the desired level.
4. The PC's microphone may be muted by clicking the **Microphone** button. A red ring with a line through it is placed over the microphone icon.



User Configuration

Connect your PC to the **ConductOR** via an RS-232 cable. Verify that both are powered on. Launch the **ConfigOR-G2** program, click the **Connect** button and verify that **Connected** appears in the lower left corner. See example on page 23.

1. In the **User Configuration** section click the **List** button. If less than four names appear you may add additional names and passwords. If four names appear, then one or more of the names must be removed before any names can be added.

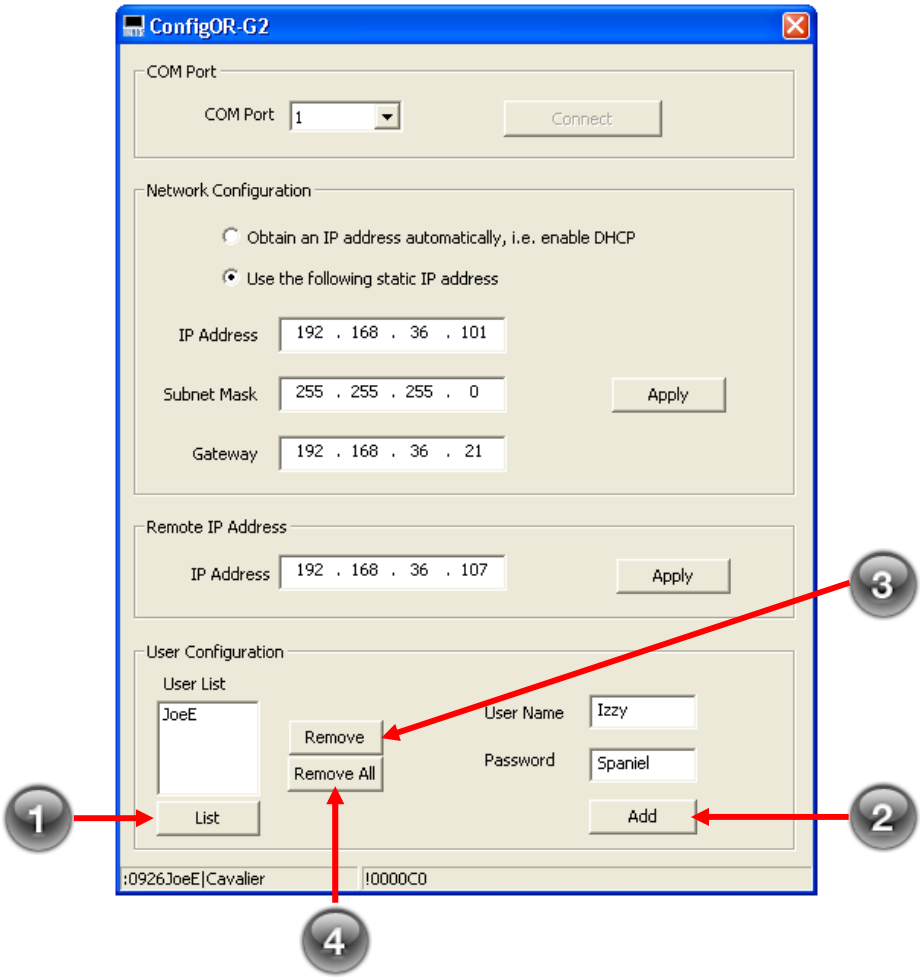
2. Type the new user name in the **User Name** window and its password in the **Password** window. Finally, click the **Add** button to save the name and password.

3. A single user name may be removed by selecting the name in the **User List** then clicking the **Remove** button.

4. All user names may be removed by clicking the **Remove All** button.

Close the **ConfigOR-G2** program, then turn the **ConductOR** off and on. This writes the names and passwords into the **ConductOR**'s memory. The names and passwords are used with the **ViewOR G2** program.

Note: User Configuration data overwrites the default user name (root) and password (admin). If all user names are deleted, the default user name (root) and password (admin) are restored when the ConductOR is turned off and on.



Demonstraton Program

The included Demonstration program (NDS 58D0023) is intended for demonstration, installation and testing of the **ConductOR**. It may not be used in an OR while any clinical procedure is in progress.

Setup:

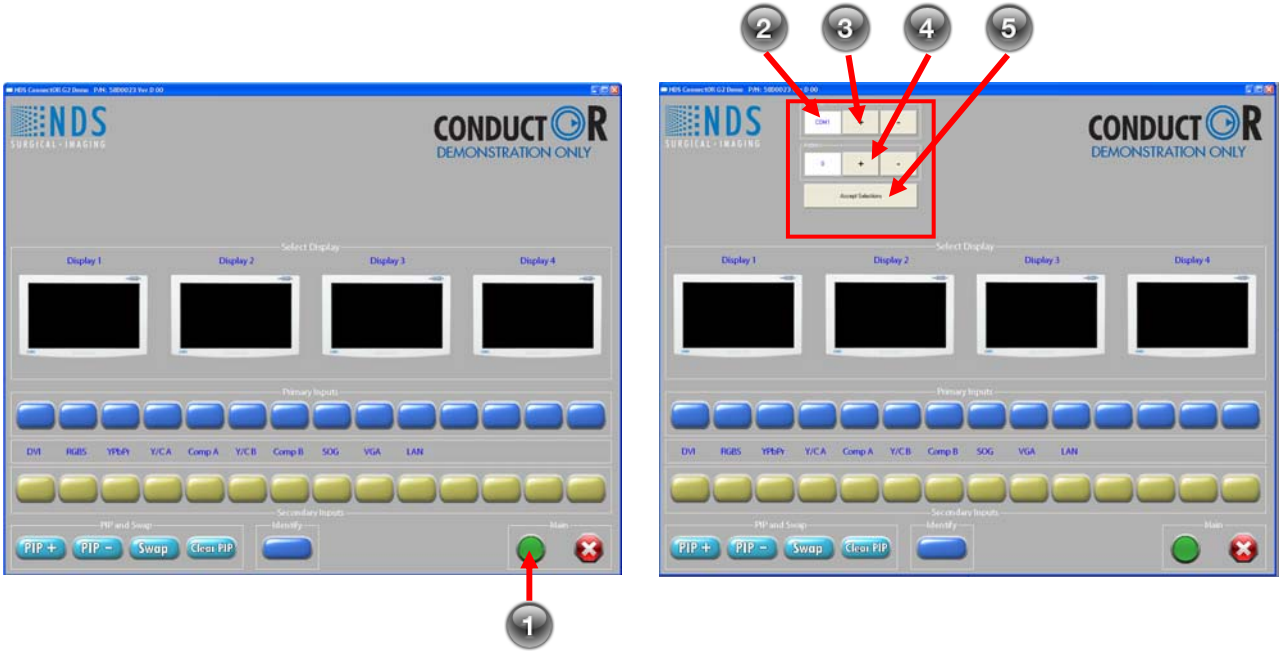
1. Connect a straight through serial cable (NDS 35D0003 or equivalent) from the PC's serial port to the **RS-232 IN** connector.
2. Connect one or more signal sources to the appropriate inputs.
3. Connect one of the outputs to a compatible monitor.
4. The **ConductOR** and the PC should be turned on.

Usage:

The demonstration program is designed to run on a 1280 x 1024 or larger monitor.
Click the Windows Start button, then click All Programs. Select: NDS Surgical Imaging, then select and click **DemoOR-G2** to launch the demonstration program. The program's startup screen is shown below. The four right hand primary / secondary input labels will be blank until the program is communicating with the **ConductOR**.

1. Click the green button in the lower right corner to start communications with the **ConductOR**.
2. The **Com Port** and **Address** selection windows are displayed.
3. Select the **Com Port** using the + or - buttons to the right of the **Com Port** window.
4. If the address isn't 0, then set it to 0 using the + or - buttons to the right of the **Address** window.
5. After selecting the **Com Port** and Address click the **Accept Selections** button.

Continued on the following page.



1. When the program is communicating with the **ConductOR**, the green button will be illuminated.

2. **Display 1** will be the active display with a red ring surrounding it.

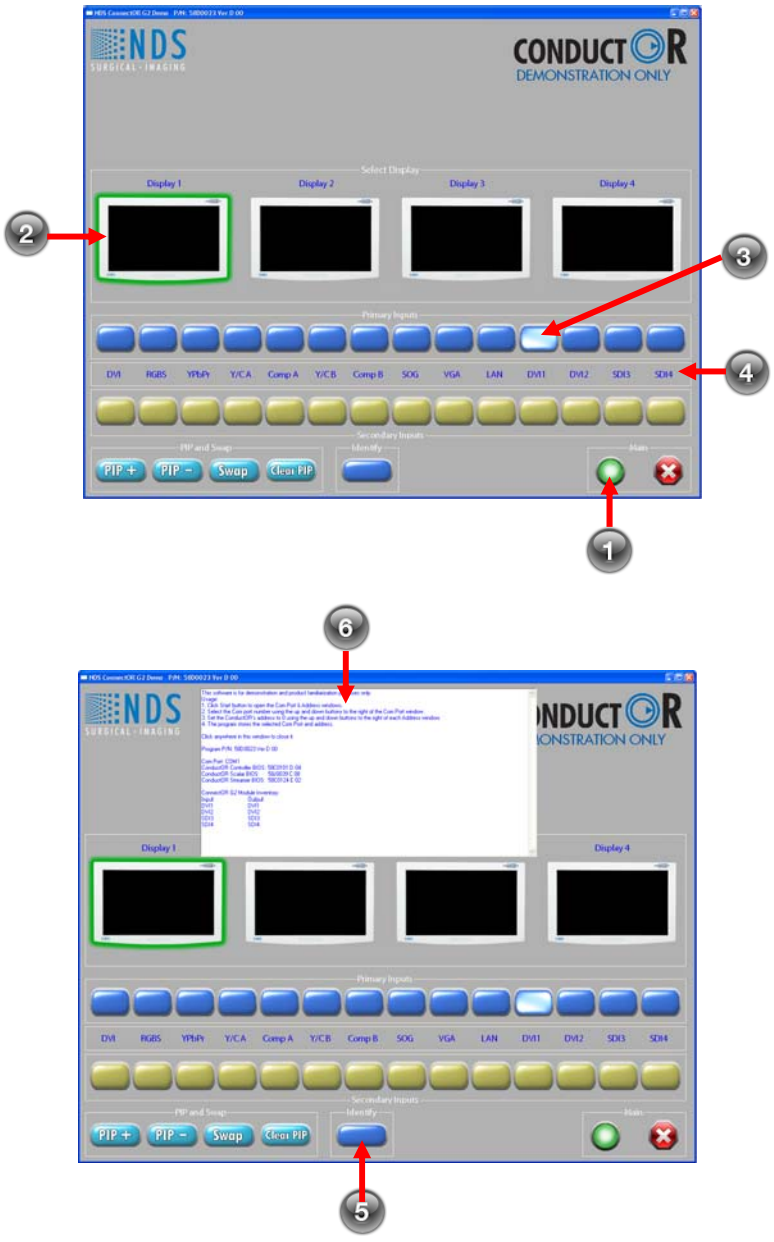
3. One of the primary input buttons will be illuminated.

4. A label will be added each of the four right primary and secondary inputs that has a corresponding input module installed.

5. Clicking the **Identify** button displays a **1**, **2** or **3** in yellow on each of the monitors connected to the **ConductOR**. The monitor connected to **OUT 4** will display a **3**.

6. The program's Help file may be viewed by clicking the **NDS** logo. The Help file contains a Usage section, Controller, Scalar and Streamer BIOS part numbers and an inventory of the installed input and output modules. **Note:** The Streamer BIOS is not displayed until the Streamer has completed its initialization, this may take up to 30 seconds.

Continued on the following page.



Select **OUT 1**, **2** or **3** by clicking the **Display 1**, **Display 2** or **Display 3** icon, Display 4 and Out 4 are selected when **Display 3** is selected. The selected display icon will be surrounded by a red ring.

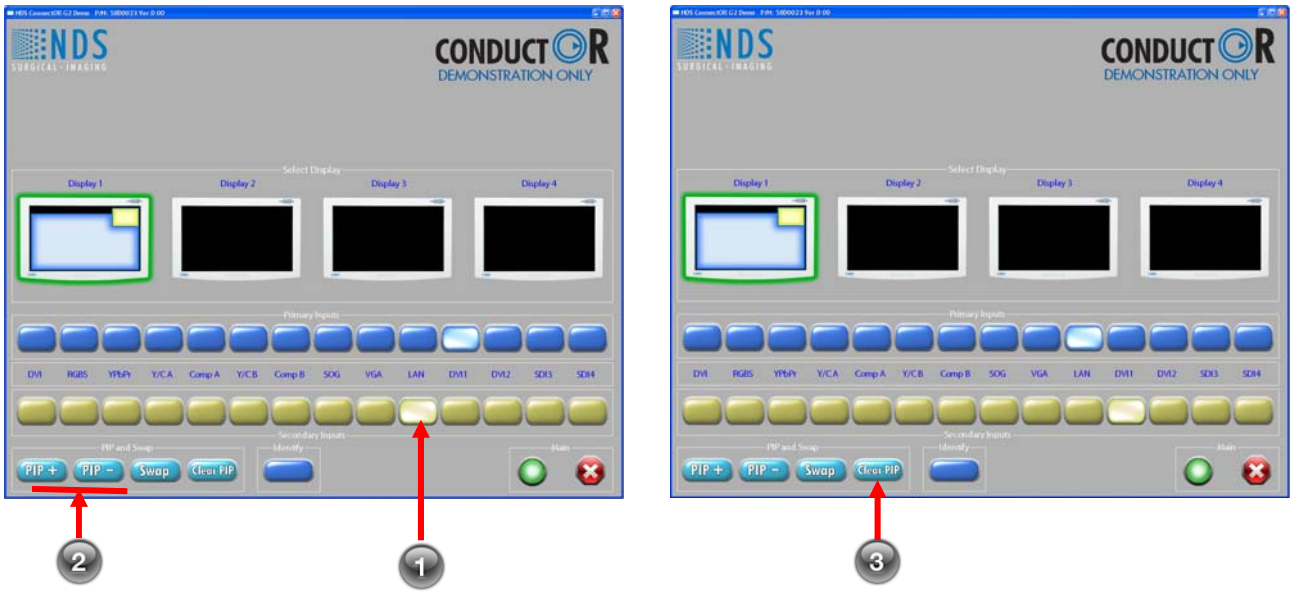
1. A secondary input may be selected by clicking one of the **Secondary Inputs** buttons. A graphic showing the size of the secondary (PIP) window will appear in the active display.

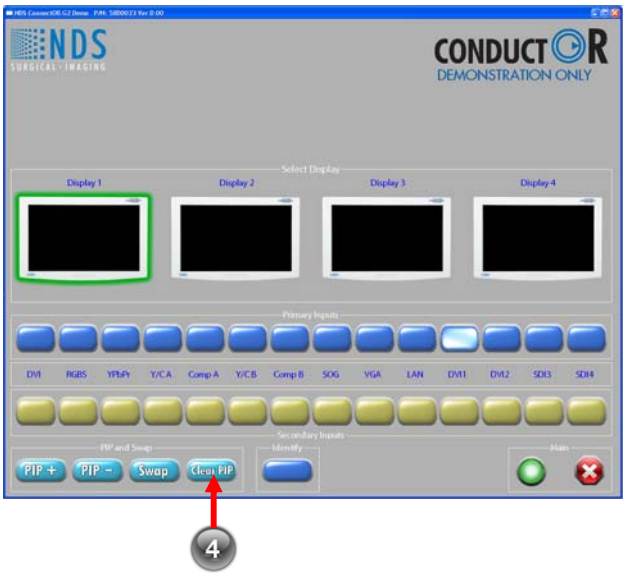
2. The size of the PIP window is controlled by the **PIP +** and **PIP -** buttons.

3. The **Swap** button exchanges the **Primary** and **Secondary** windows.

4. The **Clear PIP** button turns the PIP window off and clears the secondary input.

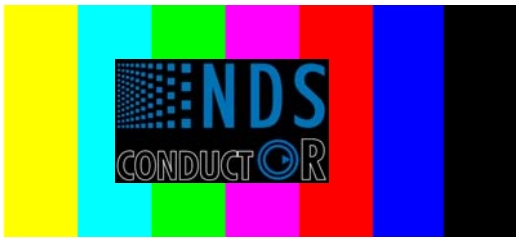
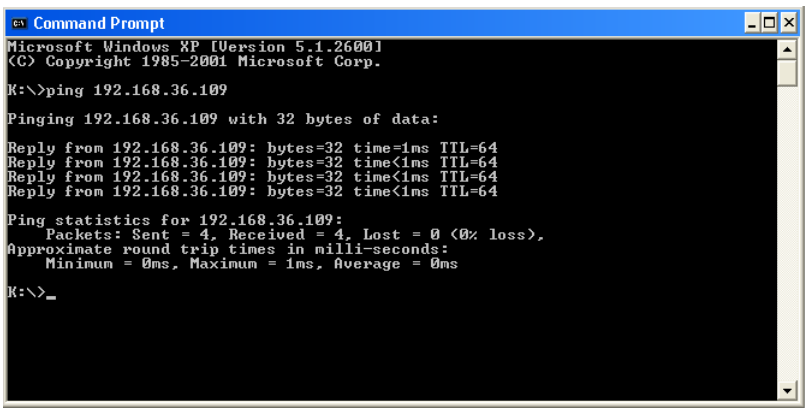
Click this button to exit the program.





Troubleshooting and Test Section

Problem	Possible Causes and Remedies
Power switch does not illuminate in the **ON** state	Loose Power Cable: Verify that the power cable is fully inserted into the unit's power connector. Failed Fuse: See Fuse Replacement procedure on page 56. Wall Socket: Some wall sockets have on / off switches built in. If the socket you are using has a built in switch, verify that is in the on position.
Input Module ID is not shown the Primary Input or screens	Input Module is not installed: See Module Removal and Installation procedure on page 4. Input Module is not fully seated in the socket: See Module Removal and Installation procedure on page 4. Input Module has failed: Replace the Input Module using the Module Removal and Installation procedure on page 4.
Output Module ID is not shown on the Display Output Settings screen	Output Module is not installed: See Module Removal and Installation procedure on page 6. Output Module is not fully seated in the socket: See Module Removal and Installation procedure on page 6. Output Module has failed: Replace the Input Module using the Module Removal and Installation procedure on page 6.
Video is not displayed from a given Output Module	Output Module does not have an input routed to it or the input does not have a signal connected to it: Touch the **Select Inputs** icon (page 9), then on the **Select Inputs** screen touch the **Identify** button. If the module's ID is displayed on one of the connected displays, then select an input that is known to a signal connected to it. Output Module is not connected or is connected to wrong display: Touch the **Select Inputs** icon, then touch the **Identify** button. If the module's ID is not displayed on one of the connected displays, then replace the cable associated with the Output Module you are testing.
Video is not displayed when a given Input Module is selected	Connect the input signal to a different Input Module. If video appears, then the original Input Module may not be installed correctly or it has failed. If video does not appear, then the video source may be turned off or the connecting cable is disconnected or bad. If the signal source is turned on, try replacing the cable. Try reseating or replacing (page6) the input module.
Video is not displayed when a given fixed input is selected	Signal cable is disconnected, not properly connected or bad. Verify that the cable is connected correctly or replace the cable.
Loss of image on remote viewer program	If the viewer was previously displaying an image, then either the network has been disconnected or was interrupted for more than 5 seconds. Network interruptions of more than 5 seconds cause the viewer software to time out . The viewer software will then need to be re-initialized to restore the connection.

Problem	Test
No video output	Output Module confidence test: 1. Turn the **ConductOR** off. 2. Connect a display to each Output Module. 3. Verify that each display is turned on and that its input type matches the output type of the output module to which it is connected. 4. Turn the **ConductOR** on. 5. In approximately 20 seconds, the **Startup Screen** (see page 8) should appear on each of the connected displays. If the **Startup Screen** appears on all displays, then the Output Modules are good. Touch the **Select Inputs** icon, then touch the **Identify** button. A **1** will appear on the display connected to output 1, **2** will appear on the display connected to output 2 and **3** will appear on the displays connected to outputs 3 and 4.
Data is not streamed to the network	1. Connect a compatible display to **OUT 1**, select Display 1, then select the **LAN** input. Input selection is described on page 11. The test pattern shown below should appear on the display. If it does not, then data streamer is not running. 2. Review Streaming Video and Audio section that starts on page 36. Verify that a network connection has been established. 3. On the **IP Streaming** screen verify that the **Mode** is **Transmit**. If the 'Streaming subsystem is initializing' message appears and does not clear in 30 seconds, turn the **ConductOR**'s power off and on. 
Network connectivity	Network connectivity test: 1. Verify that the **ConductOR** is turned on and connected to your network. 2. From the front panel select **IP Streaming** the **IP Address** window should hold an IP address. 3. From a PC connected to the same network as the **ConductOR**, click the **start** button then select: All Programs > Accessories > Command Prompt. 4. Type **ping** and the IP address from the **IP Address** window. The response should be as shown in the screen shot below. **Note:** Your IP address may be different from the IP address in the screen shot. 

Serial Port Setup

Hardware Setup

Turn the **ConductOR** on.

Connect your PC to the **ConductOR** using a standard RS-232 (NDS P/N 35D0003 or equivalent) cable.

Hyper Terminal Setup

The table at the bottom of this page shows the serial port parameters.

Click Start

Select All Programs > Accessories > Communications

Click Hyper Terminal

Enter a name for the new connection and click OK.

In the Connect To menu, select a COM port from the Connect using drop down menu and click OK.

In the COM Properties menu:

- Set Bits per second to 19200
- Set Data bits to 8
- Set Parity to None
- Set Stop bits to 1
- Set Flow control to None
- Click OK

Click File, click Properties, then select ASCII Setup from the Properties menu

In the ASCII Setup menu select:

- Echo typed characters locally.
- Click OK to exit ASCII Setup

Click OK to exit configuration. Click File and select Save to save the configuration.

Serial Port Test

Place the cursor in the text area of the Hyper Terminal window and press Enter, **!0003C3** is displayed.

Type **:070100078F** and press Enter.

!0000C0 is displayed

Type **:0000000080** and press Enter.

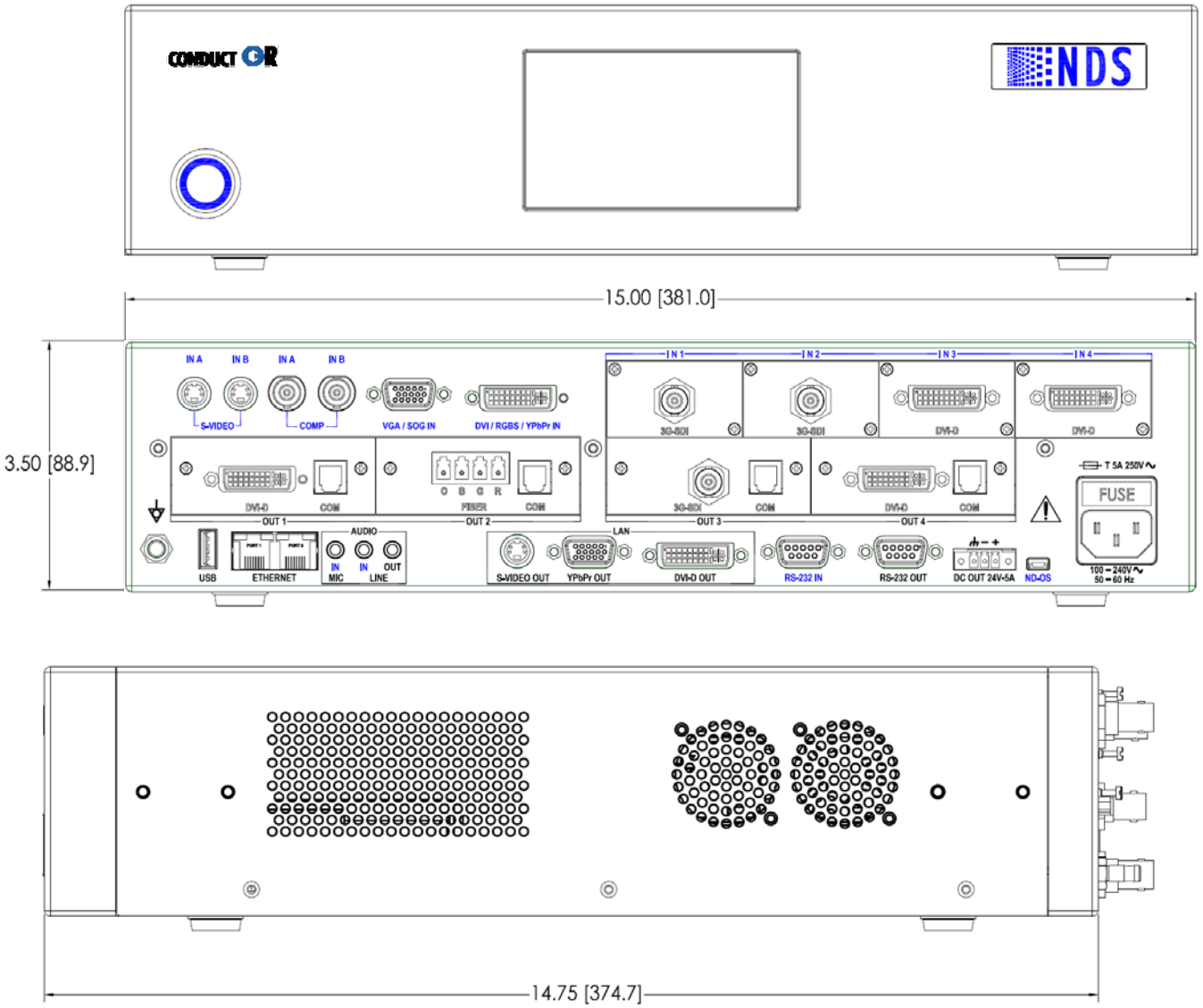
!000058J0039RBBxx is displayed. Where:

- ! = Start of response.
- 0000 = Response OK.
- 58J = BIOS type.
- 0039 = BIOS number.
- R = Revision letter.
- BB = Build number (minor revision).
- xx = Checksum

A complete set of **ConductOR** serial commands is available. See the General Information section on page 2.

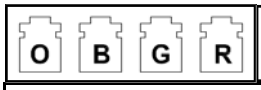
Parameter	Setting
Baud Rate	19200
Parity	None
Data Bits	8
Stop Bits	1
Flow Control	None

Drawing and Dimensions



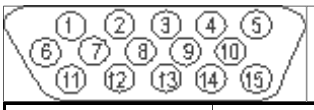
11

Video Connectors and Pin Outs



Fiber Optic

O	Clock
B	Blue
G	Green
R	Red

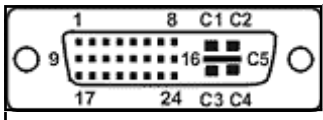


VGA

1 RED	6 GND RED	11 ID0
2 GREEN	7 GND GREEN	12 ID1
3 BLUE	8 GND BLUE	13 HORIZ SYNC
4 ID2	9 N. C.	14 VERT SYNC.
5 GND	10 SYNC GND	15 ID3

S-Video

Pin	Name	Description
1	GND	Ground (Y)
2	GND	Ground (C)
3	Y	Intensity (Luminance)
4	C	Color (Chrominance)



DVI-I*
Digital and Analog .

DVI-I Supports digital **and** analog (RGBS / YPbPr). Analog data appears on pin 8 and pins, C1 through C5.
* Compliant with DVI 1.0

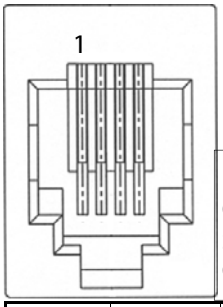
PIN#	SIGNAL	PIN#	SIGNAL
1	T.M.D.S. DATA 2-	**16**	HOT PLUG DETECT
2	T.M.D.S. DATA 2+	**17**	T.M.D.S. DATA 0-
3	T.M.D.S. DATA 2/4 SHIELD	**18**	T.M.D.S. DATA 0+
4	T.M.D.S. DATA 4-	**19**	T.M.D.S. DATA 0/5 SHIELD
5	T.M.D.S. DATA 4+	**20**	T.M.D.S. DATA 5-
6	DDC CLOCK	**21**	T.M.D.S. DATA 5+
7	DDC DATA	**22**	T.M.D.S. CLOCK SHIELD
8	ANALOG VERT. SYNC Fixed DVI Only	**23**	T.M.D.S. CLOCK+
9	T.M.D.S. DATA 1-	**24**	T.M.D.S. CLOCK-
10	T.M.D.S. DATA 1+		**Fixed DVI Only**
11	T.M.D.S. DATA 1/3 SHIELD	**C1**	ANALOG RED
12	T.M.D.S. DATA 3-	**C2**	ANALOG GREEN
13	T.M.D.S. DATA 3+	**C3**	ANALOG BLUE
14	+5V POWER	**C4**	ANALOG HORIZ SYNC
15	GND	**C5**	ANALOG GROUND

12

Data Connectors and Pin Outs

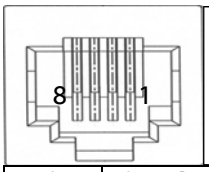
Serial Control

Pin	Name	Description
1	NC	No Connection
2	RXD	Data Receive
3	TXD	Data Transmit
4	NC	No Connection
5	GND	Ground
6	NC	No Connection
7	NC	No Connection
8	NC	No Connection
9	NC	No Connection



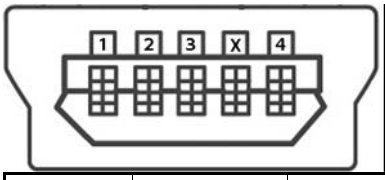
RJ-22 Output Module Serial Data Connector

Pin	Name	Description
1	TX	Data Out
2	GND	Ground
3	GND	Ground
4	Rx	Data In



Ethernet Connector

Pin	Signal	Description
1	TX+	Transmit
2	TX-	Transmit Return
3	RX+	Receive
4	Unused	N/C
5	Unused	N/C
6	RX-	Receive Return
7	Unused	N/C
8	Unused	N/C



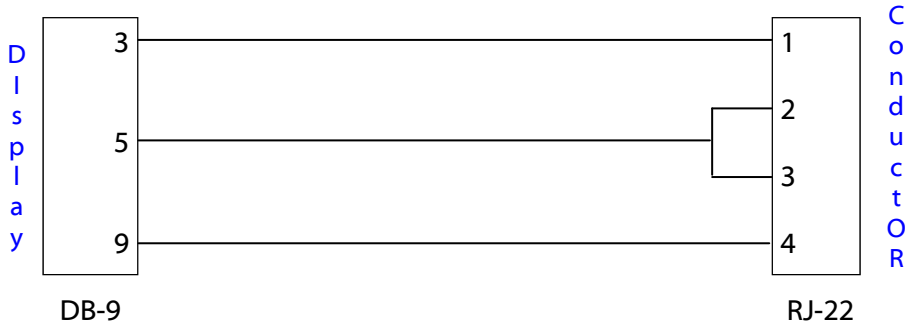
USB Connector

Pin	Name	Description
1	VCC	+5 VDC
2	D-	Data -
3	D+	Data +
X	ID	N/C
4	GND	Ground

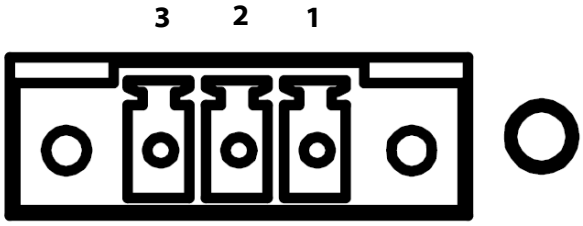
The USB port is used for external storage

ConductOR Display Control Cable

RS-232 cable for NDS Radiance or EndoVue display



DC Power Connectors and Pin Outs

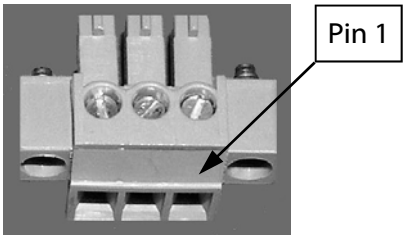


Weidmuller BL 3.81/3 connector			
Pin	1	2	3
	+ 24 VDC	GND	Chassis

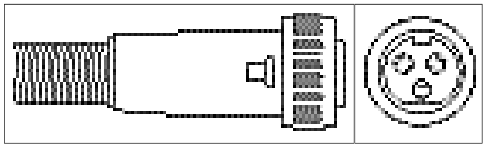
24 Volt Extension Cables

Use only copper wire for power wiring. Power extension cable must be constructed in accordance with applicable hospital and electrical codes. Cable should be constructed of **SJT, SJTO, SJO, ST, SO, STO** or equivalent flexible cord per US National Difference Clause 59.1DV. Users outside of the U.S. should adhere to the applicable electrical codes for their country.

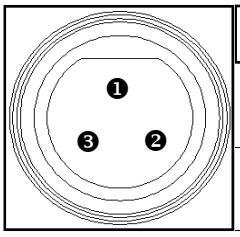
The cable requires one each of the following connectors: Switchcraft SL403F (female) and Weidmuller BL 3.81/3. See illustrations below.



Weidmuller BL 3.81/3

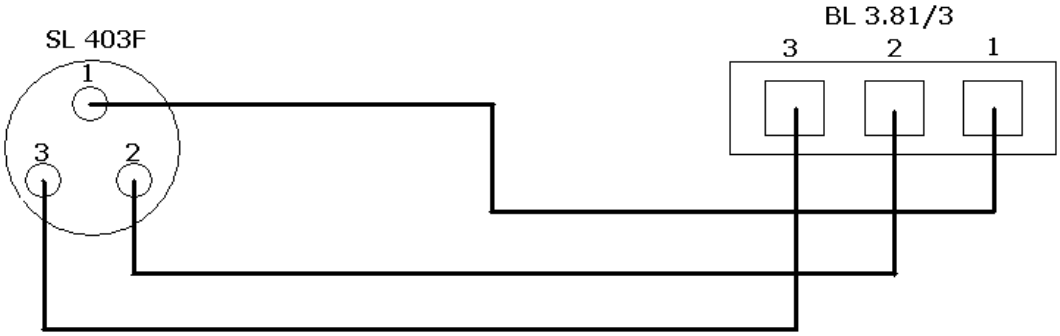


Switchcraft SL403F

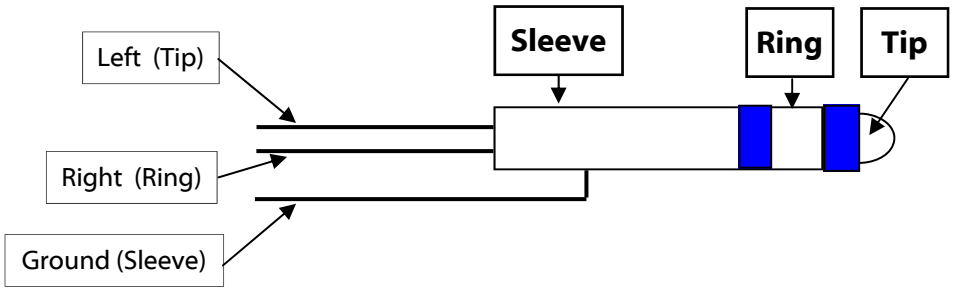


Switchcraft 403F connector			
Pin	1	2	3
	+ 24 VDC	GND	Shield

24 Volt Extension Cable Schematic

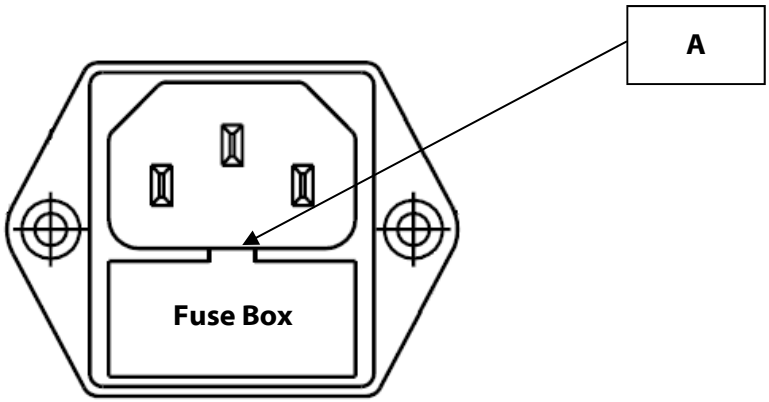


3.5mm Audio Plug Pin Out



Fuse Replacement

1. Disconnect the power cord from the ConductOR.
2. Using a small screwdriver at point A, pry the Fuse Box out .
3. Replace the fuse with a **Buss T5AL 250V** or equivalent.
4. Slide the Fuse Box into its receptacle and press until it seats.



Specifications[1]

DVI and Fiber Output Resolution[2]	1920 x 1200p, 1920 x 1080p or 1280 x 720p
SDI Output Resolution[2]	1920 x 1080p, 1920 x 1080i or 1280 x 720p
VGA Input signal level at 75Ohms	0.7 V p-p
HD-SDI Input signal level	.8 to 2.0 V p-p
S-Video Input signal level	0.7 V p-p
Composite Input signal level	0.7 V p-p
Sync On Green (SOG)	0.7 V p-p
RGBS Input signal level	0.7 V p-p
RGBS Input Signal Sync	0.4 to 4.0 V p-p
Stand Alone Power Consumption (nominal)	66w[3]
Power 24 VDC Power Out (max)	120w
System Weight	10.5lbs (4.5 kg)
Environmental	
Operating Temperature	+50 to 104^{0}F (10 to 40^{0}C)
Operating Humidity	20 to 85% RH
Storage Temperature	-4 to +140^{0}F (-20 to +60^{0}C)
Storage Humidity	5 to 85% RH

Notes:
1. Specifications are subject to change without notice. Contact NDS for recent specifications.
2. User selectable.
3. Without a load connected to the ConductOR's 24VDC output.

Video and Graphics Inputs	Connector Type
Fixed Inputs	
S-video	DIN-4
Composite	BNC, 75 Ohm terminated
VGA / Sync-On-Green (SOG)	HD-15
DVI / RGBS / YPbPr	DVI-I
Input Modules	
DVI Input Module	DVI -D
SDI Input Module	BNC, 75 Ohm terminated
Output Modules	
DVI Output Module	DVI-D
SDI Output Module	BNC
Fiber Output Module	LC

Video Formats	Horiz. Freq (kHz)	Interlaced / Progressive	Aspect Ratio	Standard Digital/Analog
Serial Digital and Analog				
576/50i (PAL) SDI, Comp, S-video, RGBS, YPbPr	15.625	Interlaced	4:3	SMPTE 259M, C ITU 601
480/60i (NTSC) SDI, Comp, S-video, RGBS, YPbPr	15.734	Interlaced	4:3	SMPTE 259M, C ITU 601
576/50p RGBS, YPbPr, SOG, DVI	31.250	Progressive	4:3	ITU-R-BT1358
480/60p RGBS, YPbPr, SOG, DVI	31.469	Progressive	4:3	SMPTE 293M
720/50p RGBS, YPbPr, DVI, HD-SDI	37.500	Progressive	16:9	SMPTE 292M, SMPTE 296M
720/60p RGBS, YPbPr, DVI, HD-SDI	45.000	Progressive	16:9	SMPTE 292M, SMPTE 296M
1080/50i RGBS, YPbPr, DVI, HD-SDI	28.125	Interlaced	16:9	SMPTE 292M, SMPTE 274M
1080/60i RGBS, YPbPr, DVI, HD-SDI	33.750	Interlaced	16:9	SMPTE 292M, SMPTE 274M
1080/50p RGBS, YPbPr, DVI, SDI	56.200	Progressive	16:9	SMPTE 274M
1080/60p RGBS, YPbPr, DVI, SDI	67.300	Progressive	16:9	SMPTE 274M

Cleaning Instructions

Turn the unit off prior to cleaning.

Follow your organization's protocol for the handling of blood and body fluids. Clean the unit with a diluted mixture of mild detergent and water. Use a soft towel or swab. Use of certain cleaning agents may cause degradation to the labels and plastic components of the product. Consult cleanser manufacturer to see if agent used is compatible with plastics. Do not allow liquid to enter the unit.

Acceptable Display Cleaning Materials are:
Isopropyl alcohol
Methyl alcohol
Ammonia-based glass cleaners
Vinegar

Do not use:
MEK (Methyl Ethyl Ketone)
Toluene

NDS
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